Transforming practice through collaboration: A Developmental Work Research based intervention perspective on lecturers' engagement with the VLE Moodle

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Abstract

This thesis aims to contribute to understanding the issues that surround the established slow uptake of learning technologies in higher education. The research explores the relationship between social context and the appropriation of the virtual learning environment (VLE) Moodle. The study was conducted at a multi-campus higher education institute in the Republic of Ireland. The empirical basis for this research was defined by a series of Developmental-Work-Research (DWR)-based sessions with a group of participant lecturers over a 12-month period. During this time the participants were facilitated in understanding and subsequently resolving their difficulties in engaging with Moodle. A rich picture emerged of how the lecturers believed that their individualistic and bureaucratic work setting served to inhibit their engagement with technology. The DWR-based Intervention facilitated the lecturers in establishing a collaborative process, during which they formed strong collegial bonds. As a result, a transformation in the lecturers' thinking became evident, and this enabled them to critically engage with Moodle in their pedagogic practice. The study also revealed how the DWR-based Intervention had wider institutional effects. Critically, these effects were appropriately managed and thus had a significant positive impact, providing valuable insights into the relationship between technology and social context.

During the study data were collected using a variety of methods including individual interviews, video-recorded DWR-based sessions, focus group interview, researcher observations and colleague feedback, both formal and informal. The work conducted in this study makes a number of contributions to research. Firstly, there is a contribution to the use of a socio-cultural approach as a critical perspective on exploring lecturers' relationship with learning technologies. Secondly, the study contributes to the research literature in the area and to the DWR intervention methodology by way of methodology adaptation and refinement. Finally, the research offers a contribution that aspires to support higher education institutions in understanding the reality and complexity of adopting learning technologies.

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Doctoral research does not occur in isolation, it is a collaborative endeavour in which a variety of people knowingly and unknowingly, contribute to the production of the final thesis. My doctoral journey was all the richer because of the intellectual, social and emotional support which I received along the way.

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1 Chapter one: Introduction

1.1 Statement of the problem

This thesis examines the relationship between cultural context and the engagement of higher education lecturers with technology. Much research on teaching and learning technologies over the past three decades concentrated on their potential to transform educational practice. However, technology did not bring about the much heralded and expected paradigm shift in education; rather, the traditional pedagogical model of knowledge transmission continues to dominate teaching and learning. What happened? Was it all hype, or did the wonder technologies get embroiled in the most obstructive and constraining elements of higher education institutions (Selwyn, 2014)? These awkward questions have inspired scholars to investigate the barriers to technology-enhanced learning in higher education. While researchers have made attempts to shed light on the situation, as we progress into the twenty-first century we are still left with a limited understanding of the phenomenon. What we do know is that the issue is complex and takes time to dissect and digest. In this thesis I am inspired by the belief that something has to change in relation to lecturers' use of technology in higher education. For this reason I aim to look at lecturer engagement with the technology Module Object Oriented Dynamic Learning Environment (hereafter, Moodle) in my own workplace—an institute of technology in the Republic of Ireland (hereafter, ITWI). The aim is to understand the issue at a local level and to contribute the findings to the global discussion.

ITWI is one of 14 institutes of technology in Ireland. These are teaching institutes which support universal higher education (Palmer, 2009). Of the 14 institutes, ITWI is unique in its multi-campus environment: it consists of five geographically dispersed campuses, each accommodating varying faculties and student numbers. It was established in 1972 as a Regional Technical College owing to recommendations made in *The Mulcahy Report* (Mulcahy, 1967), which was part of educational reform and development in Ireland. Its remit was to provide technical and technological education with a regional focus (Seanad Éireann,

1992). In 1998 all Regional Technical Colleges in Ireland were upgraded to *Institute of Technology* status in recognition of their high standards in tertiary education, where the regional role is of primary importance (OECD, 2006). In its 41 years of existence, ITWI has brought increased participation and an important regional dimension to higher education. Since its inception ITWI has expanded to five campuses in the West of Ireland region and currently has a staff of almost 1000 and a student body of 9000, of which 5000 are full time. The multi-campus structure allows ITWI to offer the five following areas of study: Furniture Design, Manufacture and Restoration (FDT School); Outdoor Education, Health Sciences and ICT; Agriculture and Environment; Art and Design; and schools of Business, Humanities, Engineering, Science, and Hotel and Catering (main campus). This study was conducted at the Business School and also included a focus group from the FDT School.

ITWI is currently operating in a challenging and changing economic climate, to which higher education systems and institutions are responding. The changing economic circumstances present many challenges for the higher education sector, and adjustments in spending are being made to match those realities. These changes demand that the sector explore new ways of continuing to deliver value for money (HEA, 2008). This indicates the broader context in which this study takes place. ITWI's strategic plan (Strategic Plan, 2009) states that it aims to be a major regional centre for the provision of higher education, with a strong applied focus. ITWI's strategy further states that the Institute aims to be known for the quality of its learning environment and to be characterised by empowered students, high quality teaching and support infrastructure, including technology (Strategic Plan, 2010-2015). ITWI aims to be a pioneer in new learning methodologies and to operate a highly networked, outward-looking and collaborative organisation.

The provenance of this study is determined by a combination of the internationally recognised demands on a higher education teaching and learning environment—as reflected in ITWI's strategic plan—and the reality of how these demands might be satisfied at grass-roots level by the promotion of a

collaborative culture, using information technology. I aim to focus on academic staff and the role that their work contexts play in the successful exploitation of technology's potential to enhance teaching and learning. If we remove the gaze from the technologies and view them simply as tools which humans use to extend their perceptions and actions, then their use in education is yet another step on the journey of human learning rather than a profound transformation in learning itself (Säljö, 1999). The focus then becomes the critical perspective of the socio-cultural issues surrounding lecturers' engagement with technology in higher education.

1.2 Rationale for the study

In my role as a full-time lecturer in the Business School at ITWI, I have had the opportunity to work in different schools and campuses across the Institute. My interest in the use of teaching and learning technology was sparked by the technology Moodle, a virtual learning environment (VLE) which was installed at ITWI in late 2006 as a pilot project and made available to all staff in early 2007. The adoption of VLEs is now accepted as more or less universal among higher education institutions (Britain and Liber, 2004; Cosgrave et al., 2011; Walker et al., 2012). My observations at ITWI suggested that Moodle was not very difficult to use; yet by early 2009 only a very small number of staff were actually using it. Academic staff viewed Moodle with a certain level of discomfort, especially those not using it, although there was a general feeling that Moodle should be employed. I sensed that the attitudes of academic staff to Moodle varied depending on their particular school. School managers thought it would be beneficial for academic staff to use Moodle, but they did not pressurise their staff in any way to do so. The Institute provided training courses in Moodle-use, but they were often poorly attended. Also, adopting Moodle was a complex issue for lecturers, an issue that seemed to go beyond the mere adoption of new technology. I made these observations at a time when the Irish government had commited an investment of €510m (HEA, 2008) to the improvement of teaching and learning in higher education. Similar funding commitments were made in the UK (H.E.F.C.E. (Higher Education Funding Council for England), 2009) and

New Zealand (Shephard et al., 2008) , for example. These commitments reflect a belief that the integration of technology with pedagogic practice can reform and modernise higher education. International trends suggest that technology has a central role in fundamental changes taking place in higher education (Schneckenberg, 2009; Walker et al., 2012).

From my observations as a lecturer, the reality was different at ground level. Lecturers could have regarded Moodle as a starting point for the technological transformation of their practice, but their interest and motivation in doing so seemed low. I believed that Moodle itself was not the problem, but that something about the lecturers' work context may have been contributing to the complex phenomenon I observed. Although my observations relate specifically to ITWI, they are not unique; the low and slow (Arbaugh et al., 2009) uptake of teaching and learning technologies on the part of academics is well documented (Blin and Munro, 2008; Schneckenberg, 2009; Kirkwood and Price, 2014; Selwyn, 2007).

1.3 My aims in this thesis

A combination of the international recognition that the innovative potential of teaching and learning technologies had not been fully exploited in higher education and my own observation of the low engagement with Moodle in ITWI prompted me to ask the question - What is the relationship between cultural context and lecturers' engagement with the VLE Moodle? Thinking about this relationship enabled me to formulate the primary research question:

What happens when a DWR-based intervention is conducted in lecturers' pedagogic practice in order to understand if cultural context impacts on their engagement with Moodle?

Through a systematic investigation of the situation in my own work setting, I aim to gain an understanding of the reasons behind academics' low engagement with tools like Moodle and to encourage academic staff to critically examine a new

technology rather than accept it blindly. The findings will complement on-going discussions about the transformative use of teaching and learning technologies. The enquiry will provide an in-depth and critical representation through the experiences of lecturers who have participated in the study.

To achieve my aims I have used an exploratory research question and a formative intervention methodology based on Cultural Historical Activity Theory (CHAT; hereafter, activity theory) and its application in the theory of expansive learning, as proposed by Engeström (1987). Activity theory provides a perspective that acknowledges the value-laden nature of technology as a mediating tool, and it supports a critical view which reveals affording and constraining factors in the surrounding context. While activity theory is the principal theoretical framework underpinning this study, I chose to complement it with the work of Basil Bernstein (1996, 2000) as a means of further analysing the lecturers' discussions. This enabled me to gain an understanding of how discourse is constructed as a result of participation in a particular context.

Guided by Engeström (2007c) I conducted an intervention in lecturers' daily work practice at the Business School in ITWI. By conducting a series of intervention sessions, I worked with the participant lecturers using representational tools from activity theory to analyse and develop their activity with Moodle. This facilitated a transformation in lecturers' thinking which enabled them to critically engage with Moodle in their pedagogic practice, while it also illuminated the nature of their cultural context.

The empirical component of this thesis is centered on my intervention in lecturers' pedagogic practice. Data were collected during the Intervention and subsequently analysed in three parts. Firstly, I conducted an activity-theory-based analysis of the lecturers from the Business School who participated in the Intervention. Secondly, I conducted a focus group with a group of lecturers from the FDT School to explore their experiences with Moodle and compare them with those of the participants from the Intervention. Thirdly, I followed and analysed Institute-wide impacts resulting from the Intervention.

1.4 The significance of the study

This study is important on a number of levels. Firstly, on a practical level, the participants changed their thinking in relation to Moodle as a result of the Intervention. They established a collaborative process and formed strong collegial bonds in what they had previously experienced as an predominantly individualistic environment. Additionally, the study had wider unexpected institutional impacts which came to the attention of ITWI's higher management. It is anticipated that the findings will contribute to discussions in the field of social theories of learning in relation to lecturers' engagement with technologies in higher education. The investigation of lecturers' experiences with Moodle revealed a rich dataset which highlights a holistic perspective. In particular, this study, by intervening in lecturers' pedagogic practice, intends to add to the limited research which considers the engagement with teaching and learning technologies from the lecturers' perspective. It intends to illuminate the crucial impact of socio-cultural context on lecturers' engagement with these technologies and to highlight how a small-scale, local initiative can have a significant impact by using an emergent design which facilitates the agentic ability of the participants.

Secondly, on a theoretical level, the importance of the study is: (i) It supports Engeström's argument that in the modern workplace we face the challenge of a new learning culture. Learning is triggered by rapid changes in products, services, organisations and technology, and mastering this kind of learning requires a reconceptualisation and reorganisation of collective work activities. (ii) It also contributes to the argument that human agency is an outcome of expansive learning by demonstrating participants' will and ability to collectively shape their own activity systems. This study also attests to the value of expanding activity theory with aspects of the work of Bernstein. Adopting Bernstein's concepts allowed me to take measures of institutional modality in different contexts. This strengthens Daniels' (2004, 2006) claim that activity theory itself does not have a language of description with which to understand

the structure of discourse as a cultural artefact, but a richer analysis can be achieved in partnership with Bernstein's theory.

Thirdly, this study is also important on a methodological level. I based the intervention broadly on Engeströmian formative interventions (Engeström, 1987). This study demonstrates that it is possible for a single researcher to successfully adapt Engeström's methodological ideas in a situation of limited resources. Most Engeströmian interventions are based on change efforts in organised work collectives in that a team of researchers are invited into an organisation to conduct an intervention to help solve pressing issues. This study is different in that I employed an emergent design. It is a ground-up initiative that demonstrates how systematic effort on the part of an insider researcher can empower participants to move from individualistic positions to become a collective change agent. Although this is a demanding process (Virkkunen, 2006), I anticipate that this study will contribute to and enrich the theoretical idea of an expansive learning process (Engeström, 2001).

At the heart of this thesis lies the argument that more expansive research approaches are necessary in order to understand how lecturers might engage with teaching and learning technologies. If we are intent on understanding how to apply relevant technologies to our practice in transformative ways, then we need to understand this complex phenomenon by exploring the value-laden nature of these technologies (Brey, 2009). More specifically, we must think about how values embedded within technology shape human activity and reinforce or disrupt social, cultural and historical factors in an educational setting. The intention of this thesis is to demonstrate that the disruptions and tensions in socio-cultural settings are key to understanding human mental functioning in those settings.

Other studies (Blin and Munro, 2008; Cosgrave et al., 2011; Fry and Love, 2011; Margaryan et al., 2011; Selwyn, 2007) look at the adoption and use of VLEs in higher education, but they tend to concentrate on the students' perspective, and those that have sought the lecturers' perspective have done so through the use of

surveys and interviews. The key difference of this study is that it is an intervention in the lecturers' practice. This is an attempt to understand lecturers' engagement in the wild—in the words of Hutchins (1995)—i.e., to understand human cognition in its natural habitat. The lecturers are studied collectively in their everyday work environment (the naturally occurring, culturally constituted human activity), which provides the optimal laboratory. By conducting an intervention the lecturers are given the opportunity to engage in discussions about their experiences with Moodle. These discussions are crucial for the lecturers to recognise their needs and the object of their activity (Sannino, 2008). Through the Intervention the participants can envision and implement change in their practice. They experience what Edwards (2009) calls relational agency, the ability to align one's thoughts and actions with those of others and so interpret problems within one's practice and respond to them. Unlike other studies this study goes beyond solely providing a description of the lecturers' situation with Moodle; instead, it seeks to take action and facilitate a change in their working lives.

1.5 Overview of the thesis

The thesis comprises eight chapters. Chapter one entitled Introduction stated the problem addressed by this study. It presented the context within which the study is located, outlined my approach to the research and articulated the intent and focus of the study. Chapter two is a critical review of the literature. The chapter is presented in two parts: Part A and Part B. Part A presents a critical review of the background to the problem of why teaching and learning technologies have not had the predicted transformation in higher education. This chapter gives the study a theoretical framework by locating it in the context of the broader literature and identifies some areas that remain largely under-explored. In Part A I argue that while much of the literature produced over the last three decades extols the benefits and potential enhancement of teaching technologies in education, there is a crucial need to question if these claims are empty and unrealistic. I demonstrate that many scholars question the lack of evidence of any real changes in pedagogic practice as a result of teaching and learning

technologies. In fact, the slow rate of adoption of TEL among lecturers in higher education provides a catalyst for opening a discussion on the use of teaching and learning technologies in educational practice. I also raise the issue that much of the literature heralding a technology-enhanced pedagogic practice has its gaze fixed too firmly on the technology, at the expense of the cultural context in which that technology is employed. I conclude that the socio-cultural approach is the most applicable framework through which to examine my research question.

In Part B of chapter two, I discuss the merits of a socio-cultural approach in understanding the adoption of technologies in an educational setting. I indicate that although Vygotsky recognised that institutional contexts influence psychical processes, he did not carry out micro-analyses of these contexts. I argue that micro-analyses of such settings may reveal a relationship between discursive practices and the social structure of the institutional setting. This highlights the requirement to investigate the relationship between the structuring of the social context and discourse produced by lecturers working in these contexts. I also argue that Vygotsky's (1978) central concept of mediation is helpful in understanding how individuals shape, and are shaped by, the use of tools in their environment. For example, studying Moodle as a meditational tool illuminates the implications for the study of integrating technology in educational practice. I argue that by observing lecturers' engagement with Moodle in a particular context it is possible to gain an understanding of the factors that bring about a transformation in the mental functioning of those lecturers with regards to this specific technology. I present Cultural Historical Activity Theory (CHAT) (Engeström, 1987), which has identifiable Vygotskian roots, as the primary theoretical basis for the study. I focus on activity theory as a framework that allows one to examine situated human practice in context. I argue that this theoretical orientation allows one to observe and record the interactions that take place in human activity and then to tease out the tensions and contradictions therein.

As a complementary perspective to that of activity theory, I look to the work of Basil Bernstein. I argue that some aspects of Bernstein's code theory, including

his theorizing of pedagogic discourse and his key concepts of classification and framing, offer a useful conceptual means for describing how the social structure of an institutional context can be visible in the discourse produced by the individuals inhabiting that context. Bernstein's model provides me with a model through which I could account more fully for transformations revealed in the discourse produced during the empirical phase of the study.

In chapter three entitled Methodology, I explain the ontological and epistemological orientations underpinning the study. I also explore the methodological implications of adopting activity theory in terms of their impact on the study. This is followed by a discussion of the evolution of the study.

Chapters four, five and six provide three levels of analysis of the data collected during the study. Chapter four presents the DWR-based Intervention in the Business School – a micro view. This chapter presents an analysis of the transformations that took place in the lecturers' activity system as a result of participating in a DWR-based Intervention.

Chapter five: Situating the Intervention in the wider institutional context
This chapter presents a deeper understanding of the setting of interest. I do this by turning to the work of Bernstein to complement the activity theory analysis of the data collected. This chapter also presents an analysis of a focus group from the FDT School to strengthen the argument that my intervention facilitated the creation of a context with a different structural form to that found in the setting of the Business School.

Chapter six: The wider institutional impact of the Intervention – a meso view.
This chapter presents a return to Engeström's work on activity theory to analyse the effect of the DWR-based Intervention work at the wider institutional level. The focus of the analysis is on the movement of information through the organisation, specifically how movement of the object from the DWR-based Intervention occurs throughout the wider setting of ITWI.

Chapter seven: Discussion

This chapter presents a discussion of the findings from each of these three levels and draws them together to examine how they contribute to answering the primary research question underpinning the study. The main findings are discussed under the headings of collaboration, affect and influence, which emerged as overarching themes. It further considers more secondary concerns arising from the study, namely barriers, subject position, wider institutional impacts and reconceptualisation.

Chapter eight: Conclusion

This final chapter presents a summary of how the primary research question was answered by the study. The implications and limitations of the study for pedagogic practice and methodology are also presented.

2 Chapter two: Literature review

2.1 Introduction

In this chapter I review the relevant literature in the fields of (i) lecturers' use of teaching and learning technology in higher education and (ii) activity theory, complemented with the relevant aspects of Basil Bernstein's work. This chapter is presented in two parts (A and B). Part A begins by establishing the context in which the drive to incorporate teaching and learning technologies into higher education exists. This drive reflects a global shift in higher education, whereby governments often promote technological integration in their concern for national economic competitiveness. I show how the VLE is generally considered part of the wider information-technology infrastructure in higher education, and I review the literature on teaching- and learning-related information and communication technologies (ICTs), particularly VLE appropriation in higher education. I examine the current thinking on how ICTs for teaching and learning serve higher education and review the barriers commonly reported to successful appropriation of such technological tools. Finally, I demonstrate a theme in the literature which advocates a move away from a technological focus to a broader critical perspective when studying technology for teaching and learning in higher education.

The main objective of Part B is to show how the demand for a more expansive analytical perspective on the integration of ICTs in higher education can be found by taking a socio-cultural perspective that draws on activity theory and is extended by the work of Basil Bernstein. I examine the influence of Vygotsky's ideas through the work of post-Vygotskian scholars, most notably Engeström and his work on Cultural Historical Activity Theory (CHAT). Activity theory is introduced and described in its three generational forms. Following this, the relevant aspects of activity theory are discussed. The chapter also demonstrates that activity theory, complemented by aspects of Basil Bernstein's pedagogic theory, is well positioned to provide a more powerful and expansive unit of

analysis for investigating the impact of cultural context on lecturers' engagement with the VLE Moodle.

Part A

2.2 National drive for technology in higher education

It is widely accepted that the pace of ICT innovation is increasing. In higher education, like many other areas of life, ICT is highly sought after as a means of advancement. It is a key component of the educational reform agenda (Iniesta-Bonillo et al., 2013). Evidence can be found worldwide of national investment in technology in higher education. For example, in the USA the National Education Technology Plan (N.E.T.P. (The National Education Technology Plan) 2010) calls for the revolutionary transformation of higher education through the use of technology and the European Union (Gaebel et al., 2014) calls for higher education to be shaped by educators and policy makers by harnessing new technologies. Similarly, in New Zealand the Ministry of Education commissioned research undertaken at Otago and Massey universities to develop a strategic framework to support professional development for eLearning within the tertiary education sector (Shephard et al., 2008). The UK and Irish governments also place particular emphasis on supporting institutions in developing and implementing their own strategies (H.E.F.C.E. (Higher Education Funding Council for England), 2009; H.E.A. (Higher Education Authority), 2008).

Much of the relevant literature's focus on improving teaching and learning in higher level education relates to the use and application of ICTs in the teaching and learning environment. Galvin (2009) suggested that the technology project of the twenty-first century seeks to redefine and re-evaluate higher education and learning in Ireland. The National Development Plan (2007-2013) stated its objectives for higher level education in Ireland, including to reform and modernise programme delivery and to achieve world-class quality in higher education (N. D. P. (National Development Plan), 2007). Furthermore, the national strategy for higher education in Ireland (Hunt, 2011) states how the sector must respond to new technologies and their potential for enhancing the learning experience. A prevalent view is that effective integration of learning

technologies into higher education is becoming an essential proficiency for tutors (Ala-Mutka, 2009). But Conole (2010) rightly argues for another perspective, stating that a systemic change through strategic policy is required if higher education institutions are to accommodate the impact of teaching and learning technologies. Conole raises a reasonable concern that the adoption of ICTs for teaching and learning in higher education is not straightforward; it requires more than significant financial investment. While I believe that Conole's idea that change is required through strategic policy is valid, evidence from practice contradicts it. For example, Ehlers and Schneckenberg (2010) found that, despite pockets of innovation, there is little evidence to show that technologies are being used from a strategic planning perspective for systemic change in higher education. Furthermore, Bates and Sangra (2011) note the poor evidence of institutions having a formal strategic plan for the use of ICTs in teaching and learning. Similarly, I found that there was no official strategic direction given on the use of Moodle in teaching and learning in ITWI, for example. Moreover, this was seen as a "deliberate ploy" to support initiatives from grass-roots level rather than have strategically led initiatives from a managerial level (Foley, 2012). What the literature reveals is that higher education institutions are looking to ICTs as a tool with which to enhance and reform their educational environments, but there is a sense that this is a messy business (Selwyn, 2014). In the next section I will explore the nature and extent of lecturers' engagement with digital technologies as part of the teaching and learning landscape in higher education.

2.3 Engagement with digital technologies in the higher education teaching and learning landscape

While the concerns of this thesis stem from lecturers' acknowledged low engagement (Gaebel et al., 2014) with TEL in higher education, it is necessary to acknowledge the extent to which engagement does exist across the learning landscape. The results of a national TEL survey in the UK (Walker et al., 2014) which builds upon similar surveys conducted in 2001, 2003, 2005, 2008, 2010 and 2012 reveals the extent of institutional engagement with technologies that support teaching and learning activities. Interestingly, Walker et al. (2014)

reveal that since its 2012 survey, the use of a VLE as an enterprise solution has increased across all higher education institutes. Plagiarism detection tools for example Turnitin and online submission tools are the most common centrally supported software across the sector (Walker et al., 2014). In addition, e-portfolio, blogs and online assessment tools are well established, whereas podcasting tools have declined in use since the 2010 survey: they appear to have been replaced by lecture recording and media streaming solutions. Social networking tools, document sharing software for example Google Docs, and blogs are the most common non-centrally supported tools in use across the sector. Examples of the integration of specific technological tools with teaching practices include the use of video games (Coller and Scott, 2009), the use of video and audio podcasts for lectures (Copley, 2007) the use of e-portfolios (Herman and Kirkup, 2008) and the use of wikis for student engagement and report writing (Neumann and Hood, 2009).

In addition, for more than a decade the New Media Consortium (NMC) has been charting the global landscape of emerging technologies in teaching and learning in higher education in their annual Horizon Reports. These reports (Johnson et al., 2008, 2009, 2010, 2011) "aim to identify and describe with examples technologies that are likely to have a large impact on teaching, learning, or creative inquiry on college and university campuses in the following five years" (Johnson et al., 2010, p.3). In the UK context, a JISC-sponsored NMC study (Johnson and Adams, 2011)explores the impact of emerging technologies on teaching, learning, research and information management in UK higher education for the period 2011 to 2016. These NMC reports provide impressive lists of institutions and individuals using the latest technologies in various academic disciplines. The NMC Horizon Report (Johnson et al., 2013) for example highlights 10 emerging technologies that are predicted to impact education over the course of the next five years: cloud computing, mobile learning, learning analytics, open content, 3D printing, Massive Open Online Course (MOOCs), virtual and remote laboratories, games and gamification, tablet computing and wearable technology.

While NMC (Johnson et al., 2013) predicted that MOOCs would dominate the higher education learning landscape in the following year, this prediction can be challenged as Walker et al. (2014) finds that there is no discernible evidence of a MOOC effect having yet taken place across the higher education sector in the UK. Supporting this finding the European Union's *High-Level Group* on the *Modernisation of Higher Education* (E U 2014) reports that only 12% of European higher education institutions offer MOOCs, but perhaps even more interesting are the findings of a European University Association survey (Walker et al., 2014) which reports academic staff's reaction to MOOCs – 42% report mixed feelings, 30% claim to have little knowledge of, or a lack of interest in, MOOCs and only 10% are positive towards MOOCs. Admittedly MOOCSs are only one part of the current wave of innovation in higher education however, The survey (E U 2014) asserts that this wave of innovation is progressing at a very uneven pace across Europe so much so that Europe risks being left behind as other parts of the world are faster to reap benefits from the transformative effects of technologies on pedagogy in higher education. What becomes clear is that engagement with teaching and learning technologies is not consistent across the global higher education landscape. A further exploration of this issue requires a deeper consideration of the nature of the transformation that is desired through the integration of pedagogy and technology. This is considered in the next section.

2.4 The concept of transforming practice through the use of technology

What emerges from the literature as a recurrent theme is the notion that technology can and will transform educational practice, a notion which requires further exploration. At a national level for example, Ireland's digital roadmap seeks to build digital capacity to realise transformative change in the higher education teaching and learning landscape (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2015). There are widespread discussions on how exactly technology can transform higher education ranging from those who predict the end of campus-based education as we know it (Harden, 2012) to those who believe that technological

developments for example MOOCs are over-hyped and in many cases amount to nothing more than fads lacking any serious pedagogy (Vardi, 2012). A recent report to the EU Commission (E U 2014) on new modes of teaching and learning in higher education claims that we now stand on the cusp of real transformative change in higher education which must be embraced fully to ensure that we provide the best learning experience for all students, across the globe.

While the literature is replete with references to technology's potential to transform higher education there is a notable absence of any specification of what the nature of such a transformation might entail. Kirkwood and Price (2014) address this issue in their recent critical review of literature on technology enhanced learning (TEL). They accurately conclude that it is rare to find explicit statements on what is actually meant by technology enhanced learning and more explicitly what this enhancement actually means. This apparent lack of a shared understanding on how technology is perceived to enhance higher education teaching and learning environments causes some difficulty. In the absence of a clear articulation of what is meant and understood by technology's potential to enhance, academics do not have a good understanding of technological-enabled achievements in their pedagogic practice (Kirkwood and Price, 2014).

What becomes crucial is the need to distinguish between technology's potential to enhance and its potential to transform especially as the literature reveals a recurrent theme that the predicted transformative effects of eLearning on teaching and learning have not come to pass (O.E.C.D., 2005; Keller, 2005; Kirkup and Kirkwood, 2005; Selwyn, 2007). It is generally agreed that where improvements did occur they were nowhere near transformational. There is little evidence of any serious transformation or alteration to the structure of teaching and learning activities (Laurillard, 2007; Blin and Munro, 2008).The integration of eLearning in universities has so far been disappointing as its potential has been neither fully recognised nor systematically exploited (Schneckenberg, 2009). What emerges is the need to consider the distinction between enhancement and transformation. According to Oxford Dictionaries

Online (Oxford Dictionary 2015) enhancement is to 'intensify, increase, or further improve the quality, value, or extent of:' while to transform is to 'make a marked change in the form, nature, or appearance of [x]'. Drawing on these definitions the following questions arise: what is intensified? What is increased? What is improved, and, in the case of transformation what is changed in form, nature or appearance? Is it the use of technology that is intensified and increased? Is it the pedagogic practice that changes in form? These questions generate confusion. However, the H.E.F.C.E. (2009, p.2) TEL strategy is helpful in clarifying some of these questions in that it identifies three levels of potential benefits of employing a TEL strategy: (i) efficiency – existing processes carried out in a more cost-effective, time-effective, sustainable or scalable manner; (ii) enhancement – improving existing processes and the outcomes; (iii) transformation – radical, positive change in existing processes or introducing new processes.

From a review of relevant empirical and theoretical papers that discuss the reach of technology in higher education it seems that the use of technology in teaching practice is often to simply replicate existing teaching practices (Lorimer and Hilliard, 2008; Neumann and Hood, 2009; Griffin et al., 2009). Evidence of the use of technology to supplement existing teaching practices whereby versions of existing course materials or resources are made available for students to access anytime they want (Copley, 2007; Swan and O' Donnell, 2009; Taylor and Clark, 2010) are also common. Kirkwood and Price (2014) accurately note that in studies where technology is used to replicate or supplement existing practices enhancement is often conceived in different ways. For example operational improvements are observed where resources are more accessible to students (Copley, 2007; Taylor and Clark, 2010). Quantitative changes in learning are found when using technology in teaching practices results in students demonstrating improved engagement with a learning task (Ng'ambi and Brown, 2009). There is some evidence of studies which are characterised as transforming the learning experience. Such studies focus on the transformation of the learning experience and appear to use technology to contribute to the redesign of teaching and learning activities and usually involve substantial and

structural curriculum changes for example (Coller and Scott, 2009; Cooner, 2010; Dalsgaard and Godsk, 2007). Scholars (Dahlgren, 2005; Hakkarainen et al., 2007; Lee et al., 2008) have attempted to clarify what transformation is desirable when using technology as a qualitative change in learning, such as the development of deep learning or intellectual skills. Hakkarainen et al. (2007) and Lee et al. (2008) took this further by specifying desirable outcomes such as the promotion of reflection on learning and practice, and a deeper engagement with, and richer understanding of content. To a point these are attempts at specifying what technologically enabled transformation in teaching and learning is desirable but as Cooner (2010) reminds us, the difficulty in assessing whether qualitative transformation had occurred or not is not easily overcome. Specifying desirable qualitative transformation in pedagogic practice is challenging because although we can intervene in practice using technology it is problematic to demonstrate what has been achieved and how it has actually occurred (Price and Richardson, 2004; Coller and Scott, 2009).

According to Kirkwood and Price (2014) those directly involved in teaching and supporting students are more likely to be involved in the transformational benefits of technology. While this assertion seems reasonable what emerges is the difficulty it presents in practice. For example, how do we measure a transformation in teaching practice or in students' learning? We are surely relying on what Kirkwood and Price (2014) refer to as a value judgement where we view something as being improved in some way. A close scrutiny of the literature reveals the complexities involved in specifying the nature of a desirable technologically enabled transformation in pedagogic practice in higher education. What emerges is that to date there has been a concentration of studies on changes in the means through which higher education teaching happens (Kirkwood and Price, 2012) with a focus on reproducing and reinforcing existing practices. The challenge is to conduct a more critical enquiry (Selwyn 2011) into the potential of technology to transform how teachers teach and how students learn (Kirkwood and Price, 2014), but this is still largely unfulfilled. Thus there is much still to be learned about technology's effective educational contribution, and this, is now recognised globally as a challenge within higher education (E U

2014). While studies such as that of Kirkup and Kirkwood (2014) are insightful, extensive and wide-ranging, questions remain unanswered. We are still left with little evidence to suggest that ICTs have had any significant impact on pedagogic practice in higher education. Certainly, the numerous claims of the transformational potential of teaching technologies do not seem to have borne fruit. These findings prompt the question: why has the predicted transformation not happened? Were our expectations too high, or is there a mismatch between the potential of the technology and the practical settings where it is deployed? Did the use of technologies get embroiled in a constraining system or setting? Were the technologies simply over-hyped and the promises empty? For the most part these questions still remain unanswered. A number of scholars (Conole, 2004; Selwyn, 2007; Schneckenberg, 2009; Oliver, 2011) in the fields of education technology and sociology have considered this issue. While they concur on the lack of any significant changes in pedagogic practice as a result of adopting technology, they also call for further exploration of the phenomenon. Conole (2004) questions the gap between the hype surrounding eLearning and the reality. Selwyn (2007) echoes Conole, noting the need for the academic community to account for the divide between enthusiastic rhetoric and the "mundane reality of university ICT use". Conole (2004) and Oliver (2011) argue that research on the use of technology in education all too often overemphasises the influence of technology. While this may be part of the explanation, one is left in no doubt that the subject requires further investigation.

2.5 Addressing the issue of integrating technology with pedagogic practice

The literature indeed indicates that globally higher education provides evidence of patterns of lecturer engagement with TEL, yet scholars still argue that there is little evidence of any overwhelming transformation to the structure of teaching and learning activities (Laurillard, 2007; Blin and Munro, 2008). Schneckenberg (2009) challenges the situation asserting that technological integration with pedagogy has so far been disappointing as its potential has neither been fully recognised nor systematically exploited. Today in 2015 while there is evidence of patterns of innovation as discussed in the previous sections these patterns do

not conform to outcomes that are transformative and so concerns are still expressed about the extent to which effective use is being made of technologies to enhance teaching and learning practices (E U, 2014). The evidence of these concerns is visible in national and international initiatives to enhance teaching and learning with digital technology. For example, in the USA, The National Education Technology Plan (N.E.T.P. (The National Education Technology Plan) 2010) represents a national call to apply advanced technologies used in business and everyday life in education in order to improve learning, accelerate the diffusion of effective practices, and use data to guide continuous improvement. Similarly, in the European context educators have generally have been cautious about how they engage with technology in the teaching and learning space (E U 2014). In the Irish context, Ireland's digital roadmap for enhancing teaching and learning in Irish higher education (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2015) states that all higher education lecturers could use technology more effectively to improve their teaching and as such it brings together the knowledge and experience from across the Irish education sector to highlight the way forward for Irish higher education.

Therefore, it must be acknowledged that what exists globally are pockets of innovation often of very high standards (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2015) but, as a recent JISC report (Chatterton, 2015) on current practices and challenges in TEL asserts, while higher education leaders appreciate the strategic importance of engagement with TEL, there does not appear to be consistency in approaches to embedding TEL in pedagogic practices. Arguably we still have what Conole (2004) observed a decade ago: many institutions experiment with technology but fail to embrace it fully enough to effect significant change in teaching and learning practices.

Notwithstanding the evidence that suggests scholars have lamented the lack of any significant transformation in educational practice as a result of technological innovation and the acknowledged (Kirkwood and Price, 2014) difficulty in clear specifications of the nature of a desirable transformation there are calls from national and international levels for higher education institutions to seriously

consider how they plan to drive the integration of technology and pedagogy from a strategic level. For example, a recent EU high-level group report (E U 2014) reveals the need for European higher education to develop strategic plans which will incorporate leadership and vision in order to more fully engage teaching staff in the potential offered by using digitally supported teaching and learning. Arguably, strategic direction on this issue is a good thing but as Jakobsen (2009) points out lecturer support and acceptance is possibly the most complicated issue relating to wholly embedding technology and pedagogy into educational institutions. Thus from a practitioner or lecturer perspective which is the concern in this thesis the question of how we begin to think about integrating technology with our pedagogic practice becomes crucial. This is indeed a complicated issue but a good place to start is with the virtual learning environment (hereafter, VLE) as it is seen as the entry-point for the integration of technology and pedagogy (Naveh et al., 2010).

2.6 Virtual learning environments in higher education

In this study my interest is in the technology-enabled or virtual learning environment infrastructure, commonly referred to as the VLE. The focus of my research question is whether lecturers' cultural context impacts on their engagement with the VLE Moodle. Before I explore issues relating to the context, it is necessary to understand the place of VLEs in higher education. VLE is the term commonly used in Europe and Asia, but in the USA VLEs are often referred to as course management system (CMS) or learning management system (LMS) (Piña, 2010). They have been the primary entry-point in integrating technology with pedagogy for most lecturers in higher education (Morgan, 2003). JISC (Joint Information Systems Committee 2010) defines a VLE as a piece of software that is accessible via a web browser and provides an integrated online learning environment which can be used to support both flexible and distance learning. A VLE is often a component of a managed learning environment (MLE), defined as including a range of an institution's information systems and processes.

It is important to note that throughout the relevant literature the umbrella term "eLearning" is often used to include issues relating to the adoption and use of

VLEs. For example, when writing on changes that had taken place in the institutes of technology in Ireland during the first decade of the millennium, Palmer (2009b) notes the introduction of eLearning using VLEs. Jones (2009) echoes this observation, arguing that the selection of a VLE was the universal response to eLearning by universities. Similarly, Piotrowski (2009) defines eLearning as "a general term describing all kinds of computer-mediated and computer-supported learning and teaching".

More recently Guri-Rosenblit and Gros (2011) note that the term "technology-enhanced learning" is now the commonly used term when talking about technology in an educational environment. Kirkwood and Price (2014) support this view. It is helpful to note the UK's Universities and Colleges Information Systems Association's (UCISA) definition of TEL:

> Any online facility or system that directly supports learning and teaching. This may include a formal VLE, an institutional intranet that has a learning and teaching component, a system that has been developed in house or a particular suite of specific individual tools. (Brown et al., 2008)

The literature reveals that the terms VLE, TEL and eLearning are used in diverse and perhaps contradictory or often confusing ways. In this study I rely on UCISA's (Browne et al., 2008) definition of TEL to include the VLE Moodle.

The international literature shows a substantial uptake of VLEs across higher education institutions. These are often considered a central point of contact between lecturers and their students. Faculty and administrators regularly point to the popularity of VLEs as evidence that eLearning has become institutionalised in higher education (Piña et al., 2008). Internationally, VLEs have become almost ubiquitous across the higher education sector as a core component of eLearning (Browne et al., 2006; Cosgrave et al., 2011; Piña, 2010). Higher education institutions support VLEs as a means of enabling eLearning. As Slowey (2012) rightly cautions, the high uptake of VLEs is often related to practical matters, such as management, efficiency, cost, etc., as opposed to

academic enhancement. This necessitates a deeper questioning of lecturers' use of, and engagement with, VLEs in higher education. While their widespread institutional adoption is not disputed, the reality of VLE usage by individual academics in their practice is a different matter.

Studies (Dutton et al., 2004; Jenkins et al., 2005; Kirkup and Kirkwood, 2005) conducted on VLE use have shown that lecturers who more often than not, are using new technology in the form of the VLE make, on average, only incremental changes in their practice. Naveh et al. (2010) suggest that lecturers can in fact maintain their traditional teaching practice while just posting their content online using the VLE. While it seems that the VLE has not had any significant transformational effect on pedagogic practice, Risquez et al. (2013) conducted a longitudinal study of the use of VLEs from early 2008 to mid-2012 across 12 Irish higher education institutions whose results suggest that the potential of the VLE in educational is under-explored. Similar to other scholars, Risquez et al. (2013) find that VLEs are used primarily as content distribution platforms, but they also go further and challenge suggestions that VLEs have not delivered on their promises and simply enable lecturers to maintain conservative teaching habits. On the contrary, Risquez et al. (2013) suggest that VLEs have the potential to enable pedagogical developments in unexpected ways, including plagiarism prevention, faculty- and peer interaction, greater feedback on learning, and monitoring student engagement and retention. They suggest that more development and support is required for lecturers in using the VLE. In addition VLEs provide a stable base, anchor points and virtual infrastructures that do not necessarily exclude the use of other tools but rather help to merge them in a one-stop-shop (Risquez et al., 2013). This perspective of the VLE as a stable, anchor point is an encouraging one from which to investigate it as a technological tool in the lecturers' pedagogic practice as it may illuminate any potential it holds as tool from which a desirable transformation in pedagogic practice could arise.

Adams (2007) reminds us that understanding how new technologies can be used to best effect may be supported by theoretical models, but it is also necessary to

describe and reflect on the lived experiences of teachers and students engaged in technology-enriched environments. Inspired by this belief I chose to look at the VLE Moodle and to investigate how lecturers at my own institute ITWI engage with it in their pedagogic practice.

2.7 Investigating engagement with the VLE in the local context

The integration of eLearning in universities has so far been disappointing as its potential has been neither fully recognised nor systematically exploited (Schneckenberg, 2009). This disappointment has prompted scholars (Kirkwood and Price, 2014) to look at the purpose of TEL interventions and ask how enhancement had been conceived. But their extensive review of the relevant literature for the recent period (2005 – 2010) concluded that "the potential of technology to transform teaching and learning practices does not appear to have achieved substantial uptake, as the majority of studies focused on reproducing or reinforcing existing practices" (Kirkwood and Price, 2014, p. 21). While these studies are insightful, extensive and wide-ranging, questions remain unanswered. We are still left with little evidence to suggest that ICTs have had any significant impact on pedagogic practice in higher education. Certainly, the numerous claims of the transformational potential of teaching technologies do not seem to have borne fruit. These findings prompt the question: why has the predicted transformation not happened? Were our expectations too high, or is there a mismatch between the potential of the technology and the practical settings where it is deployed? Did the use of technologies get embroiled in a constraining system or setting? Were the technologies simply over-hyped and the promises empty? For the most part these questions still remain unanswered. A number of scholars (Conole, 2004; Selwyn, 2007; Schneckenberg, 2009; Oliver, 2011) in the fields of education technology and sociology have considered this issue. While they concur on the lack of any significant changes in pedagogic practice as a result of adopting technology, they also call for further exploration of the phenomenon. Conole (2004) questions the gap between the hype surrounding eLearning and the reality. Selwyn (2007) echoes Conole, noting the need for the academic community to account for the divide between enthusiastic rhetoric and

the “mundane reality of university ICT use”. Conole (2004) and Oliver (2011) argue that research on the use of technology in education all too often overemphasises the influence of technology. While this may be part of the explanation, one is left in no doubt that the subject requires further investigation.

At this point it is useful to focus on a specific technology. I chose to look at the VLE Moodle to ask how lecturers engage with that technology in the context of my own workplace, where, at the time of conducting the empirical work for this study, two thirds of the lecturers did not engage with Moodle and those who did engaged with it at only an elementary level, using it as a repository for lecture notes. Moodle (Modular Object-Oriented Dynamic Learning Environment) has been available to the public since 2002, and it developed from the research work of Martin Dougiamas (Dougiamas, 2011). Moodle is open source, i.e., the source code is freely available, but implementation of the software may involve substantial investment in infrastructure (Kats, 2010). Moodle design and development is guided by a social constructivist philosophy (Moodle Pty. Ltd. , 2014). Moodle is geared towards facilitating communication and social interaction (Kats, 2010) in collaborative learning environments designed to empower teaching and learning using its user-friendly interface (Moodle, 2011). Moodle is the fastest growing LMS, with over thirty-five thousand sites and over twenty-five million users worldwide (Kats, 2010).

Investigating the factors involved in engagement with Moodle may help us to understand the reasons that the predicted and expected transformation in pedagogic practice has not occurred. Rather than starting from the point where a VLE is available for lecturers’ use, it is prudent to go back a step and ask how higher education institutions decide which VLE to choose. Although selection of a VLE is not within the focus of this study, a quick look at this question provides some useful insights. Mahlow (2010) studied the decision process involved in selecting an eLearning system. Interestingly, she found that in most cases the choice of VLE was made as follows: a strategic decision is taken to invest in eLearning, a license for a particular software product is purchased and the software is then installed; this allows an institution to claim that they “do”

eLearning. Mahlow (2010) further explains that a decision to invest in a system is often based on abstract criteria and a features list, as many systems offer similar features and functions. She shows that this facilitates decision-makers in assuming that the choice of a particular system is not important. The problem with this approach is that no thought is given to the context in which the technology will be appropriated, and institutional adoption does not equal lecturer adoption. I agree with Mahlow (2010) that it is important for institutions to give due consideration to the "soft" issues such as the culture of teaching and learning, pedagogic guidelines and teaching and learning scenarios that arise at the particular institute involved.

In the light of the relevant literature which notes the absence of any significant technology-induced transformation in educational practice, Mahlow's findings are insightful as they highlight a lack of consideration for the socio-cultural context in which an eLearning system is employed. This lack of consideration emerges as an issue to which scholars have not as yet given the attention it warrants. This is the issue I take up in this study. More often than not, scholars have looked to adoption theories when considering the integration of technology in higher education. This is considered briefly in the next section.

2.8 **Adoption theories**

Historically, many studies have used models of adoption to explore the implementation and uptake of ICTs in higher education. Rogers' (1995) suite of diffusion theories is commonly employed in such studies (Wilson et al., 2000; Kirkup and Kirkwood, 2005). Rogers' classification of adopters, from "innovators" through to "laggards", is regularly cited in studies relating to VLE implementation. However, these approaches have their limitations. For example, as Bayer and Melone (1989) found, Rogers' theory does not explain why innovations are discarded at the same rate as they are adopted. Furthermore, Rogers' theories are more descriptive of how adoption occurs rather than how facilitation might be undertaken (Straub, 2009; Kirkup and Kirkwood, 2005). While Rogers' theories do help to explain a general life cycle of technology adoption, I believe they cannot fully explain why some tools are adopted as

intended and others are not. Crucially, Rogers' theory is also weak on assessing the social context in which diffusion and adoption takes place. Chen et al. (2000) correctly argue that Rogers' theories do not facilitate an understanding of how attitude leads to an accept-or-reject decision and how innovation characteristics impact on the adoption process. In exploring the views of lecturers who did not use VLEs, Lindgard (2007) attempted to explore attitudes and concluded that in some cases lecturers actively reject it either for its pedagogical or temporal constraints. Although adoption theories are common in studies considering uptake and use of technology in education, they are not considered useful in this study. Instead, I look towards a frame of reference that enables an in-depth study of the socio-cultural context where the technology is implemented. Emphasis does not rest on the technological aspects, but rather on the social setting in which the technology is utilised. The literature provides little evidence of a focus on the socio-cultural context in studies that examine the adoption and integration of ICTs in higher education. It is precisely this deficit of attention to the social context that I attempt to address in this study.

2.9 Barriers to the adoption of technology in higher education

The literature presents evidence of barriers to the adoption of technologies, such as VLEs, with fairly consistent findings. While I note that some of the studies on barriers to adoption of technology by academics were carried out with secondary school teachers (Barnard, 1999), the findings are still relevant as the principle of people adopting technology in a teaching environment is the same. Barriers emerge as a recurrent theme. The most commonly cited obstacles to adoption are social and organisational issues, as opposed to technical issues. These issues include anxiety, unfamiliarity with the technology, resourcing, perceived usefulness, personal philosophy, the influence of colleagues and classroom dynamics (Barnard, 1999). More recently the top five barriers found as a result of 10 years of annual surveys in the UK on VLE usage and TEL-related matters are: lack of time, lack of money, departmental/school culture, lack of recognition for career development and academic staff's lack of knowledge of technologies. Interestingly, the barrier ranked third—departmental/school culture—only emerged in the 2012 survey (Walker et al., 2012). This highlights

an issue emerging in the relevant literature, i.e., that factors relating to cultural context have been under-explored in studies on the adoption of ICTs in higher education. An examination of the Irish context reveals similar barriers such as lack of time, inappropriate training for lecturers, lack of support for lecturers and the need to incorporate a TEL strategy into overall institutional strategy (Cosgrave et al., 2011; Blin and Munro, 2008).

It is striking that the barriers that emerge to uptake and usage of a VLE are organisational rather than technical factors. This further emphasises the need to devote attention to issues relating to social and cultural context rather than concentrating the gaze on technological factors. A study by Blin and Munro (2008) revealed that radical transformations of the overall social and cultural context of university teaching practices were likely to be required to challenge lecturers' limited uptake of VLEs. Lecturers' lack of technical competency commonly arises, but eLearning authors (Bates, 2000; Salmon, 2004) often cite inappropriate training as a problem in lecturers' engagement with ICTs. More recently Schneckenberg (2010, p.983) asserted the crucial point that such training courses are "not directly linked to the real teaching and learning contexts of faculty". What emerges is that the barriers to lecturers' engagement with relevant ICTs are consistently institutional and social in nature. From the literature it is evident that this aspect of potential barriers to technology uptake on the part of lecturers is under-explored. This reinforces the need to take up the challenge of investigating the social relations that underpin the modest use of TEL in higher education. I believe such an investigation is necessary if we are to move to the use of ICTs as more creative and empowering tools across higher education.

2.10 **Limitations of approaches to research on the use of teaching and learning technologies in higher education**

The relevant literature suggests that research on learning technologies has taken little account of the wider social context in which the technology is appropriated. While authors have recognised the need to undertake such an approach, the challenge has not been taken up in an institutional setting, such as in this study.

What needs to be challenged are the overly optimistic claims made about educational technology that ignore the "organisational, social and personal considerations at play in a given educational setting" (1998, p. 50). Much of the research undertaken to understand the relationship between technology and learning is limited (Kirkwood and Price, 2013; Selwyn, 2014), and, while researchers increasingly recognise these limitations (Conole, 2004; Cox and Marshall, 2007; Oliver et al., 2007; Oliver, 2011) much more study is needed at the level of the lecturers' engagement, or lack thereof, with the technology.

One reason consistently given for these limitations is that many studies have concentrated on the changes in the *means* through which university teaching happens rather than changes in *how* university teachers teach and learners learn (Kirkwood and Price, 2013). The *means* referred to is technological in nature. To use an analogy from Salmon (2005), we seem to be "flapping" instead of "flying". It appears that today's lecturers, in many cases, are still "flapping" or floundering and not yet exploiting or even critically engaging with the potential of relevant technologies in teaching. Increasingly, current thinking emphasises the need to examine the uptake of ICTs in higher education from a different perspective, i.e., to examine the social and cultural—the human—issues underpinning the low uptake of TEL among lecturers. This suggests that we might be slowly realising that we need to rethink our notion of what impedes lecturers in "flying", to use Salmon's (2005) word. This also serves to remove the primary focus from the technology as a unit of analysis, as its limitations are now understood (Conole, 2005; Oliver, 2011; Selwyn, 2011).

The common under-representation of lecturers' views on the use of ICTs in their practice is also a limitation of studies in the area of technology in higher education. I agree with McShane (2004) that this area is under-researched. Cosgrave et al. (2011) also discussed how studies commonly provide a one-dimensional view of VLE usage in Irish higher education since they focus on the student perspective. Echoing McShane (2004) they suggest the need to conduct research on lecturers' experiences of incorporating VLEs into their pedagogic practice. This call for research is valid and is exemplified by Schneckenberg's

(2009, p. 413) assertion that lecturers play a key role in education innovation as the "process owners" or "gatekeepers" (Kerres et al., 2006; cited by Schneckenberg, 2009) of the teaching activities in higher education. From this perspective an interesting question arises. If the evidence among our "gatekeepers" is for a slow rate of change (Fry and Love, 2011) in their pedagogic practice, is it reasonable to expect technological exploitation to enable and transform our educational practices? What emerges is the need to broaden the scope of research when investigating this issue. The literature reveals that scholars in the field of education and technology still search for a theoretically grounded explanation for the slow rate of change in pedagogic practice despite the availability of technologies which Christensen et al. (2002) suggested would enable teachers to perform their current duties more easily and effectively. There is a need to go to the grass-roots level in higher education and to talk to the lecturers, or "gatekeepers", if we want to investigate their engagement with teaching technologies. The next section considers an alternative perspective.

2.11 The case for taking a socio-cultural approach to studying TEL in education

The literature highlights a call for investigating the use of TEL in higher education from a socio-cultural perspective. Many scholars (Crook, 2002; Kirkup and Kirkwood, 2005; Selwyn, 2007; Blin and Munro, 2008; Schneckenberg, 2009; Cosgrave et al., 2011) argue that insufficient exploration has been conducted from this viewpoint. There is growing evidence in the literature that technology should be seen as only one element in a system where change is necessary rather than as the sole instrument of change itself. This represents a more comprehensive approach, challenging the dominant technology-focused approach. Bates and Sangra (2011) argue that the introduction of technology into teaching and learning highlights the necessity for socio-cultural change. Ehlers and Schneckenberg (2010) assert that technologies are, and remain, tools that cannot by themselves implement innovation. Mac Labhrainn (2010, p.117) further expresses the view that:

> technologies do have a potentially transformative experience, but one perhaps more subtle than is realised, acting as a catalyst for change, a means of extending communication within and beyond subject boundaries, and as a channel for delivering continuing professional development.

The three scholars above all claim that the technology itself should not be the primary unit of analysis in studies of technology in higher education. This is an accurate reflection of my approach and my understanding of lecturers' low uptake of relevant technologies within the bounds of my study. The need to examine lecturers' engagement with technology by exploring their broader social setting emerges. This perspective is also espoused by Selwyn (2011), who advocates a rigorous academic study of educational technology along social scientific lines, encompassing "social, political, economic, cultural and historical contexts within which educational technology use (and non-use) is located" (ibid, p. 66). Adding to this discussion Feixas and Zellweger (2010) crucially observe that some changes in teaching require faculty to change themselves, not simply to adopt new techniques. Oliver (2011) adopts the view that technologically deterministic explanations for engagement, or lack thereof, are widespread in studies of technology and learning. As a result, he highlights the need for researchers to move away from these technologically deterministic perspectives, especially when other elements of practice, such as people, their actions and their values, are ignored in the prioritising of technological elements. This is a key point in this study as it emphasises my rationale for choosing a socio-cultural approach to examine the impact of cultural context on lecturers' engagement with Moodle.

Oliver (2011), following Derry (2008), emphasises that much research has been "focusing unduly on the appearance of devices and underplaying the role of meaning and learning in the way that technology is taken up" (Oliver, 2011, p. 375). Here, he sounds a very reasonable note of caution as the scope of vision is narrowed to the technological tool rather than broadened to encompass the pedagogic practice. This mode of thinking represents the need for a reconceptualisation of the academic study of educational technology. It forces us to ask difficult questions of ourselves as lecturers. Why have we not critically

engaged with teaching technologies? Why has very little transformation in pedagogic practice taken place, despite the fact that the benefits of learning technologies have long been debated?

Selwyn (2011) attempts to bring balance to these discussions on educational technology by suggesting the need for a more pessimistic view. He argues that a core belief in ICTs as being somehow capable of improving education and bringing about some new social order is overly optimistic. I believe Selwyn raises a valid point because in order to understand this phenomenon better we need to include the lecturers, or "gatekeepers", in our analysis and explore their experiences and opinions of technology in their pedagogic practice. The notable paucity of studies focusing on exploring the cultural context where educational technologies are appropriated highlights the need for taking a more critical perspective (Oliver, 2011). There is little evidence of emphasis being placed, for example, on the experience of lecturers working collaboratively in order to understand and adopt appropriate technologies or on whether using technology changes lecturers' thinking on wider issues relating to pedagogy. As a result, when trying to understand the integration of technology and pedagogy we have limited knowledge of how the interactions between various stakeholders may lead to changes in work processes and to thinking across groups and individuals. Furthermore, Ehlers and Schneckenberg (2010) present a comprehensive range of findings that explore ways of engaging faculty with TEL. They conclude that, "universities have to push for a change of long-standing values, habits, beliefs at both management and faculty level" (2010, p. 6). This reinforces the need for an examination from a socio-cultural perspective, a need which this study addresses by exploring the impact of the context in which the technology Moodle is deployed.

Oliver (2011) assessed four alternative theoretical perspectives for thinking about the relationship between technology and human action. These perspectives are activity theory, communities of practice, actor-network theory and the social construction of technology. In his assessment Oliver (2011) does not advance the merits of one perspective over another, but he does

acknowledge that his own argument for a more critical approach has much in common with work that draws on activity theory. While acknowledging that each of these four perspectives offers a different way of bringing a social dimension to an investigation, activity theory inspires my approach to exploring the question of lecturers' engagement with Moodle in this study. As Oliver (2011) suggests it is an appropriate way of studying human activity in a specific cultural context. I discuss activity theory in detail in Part B of this literature review.

When adopting a socio-cultural approach, it is wise to consider Schneckenberg's (2010) analysis of e-Competence development. He considers whether institutions should consider a best-fit- or a best-practice approach to developing faculty competencies. He concludes that the main problem is that "those types of measures, which are likely to have the strongest impact on competence development, are at the same time the most complex and challenging to put in place" (2010, p. 988). The lack of qualitative research from a socio-cultural perspective may be due to the difficulties highlighted by Schneckenberg (2010). While acknowledging his assessment, I take up the challenge by employing a socio-cultural theoretical framework to understand a particular cultural context and its impact on lecturers' engagement with the VLE Moodle. The basic goal of the socio-cultural approach to mind is to create an account of human mental processes that recognises the essential relationship between these processes and their cultural, historical and institutional settings (Wertsch, 1993). This aligns with my aim in the study, and, as the socio-cultural perspective on lecturers' engagement with TEL is under-represented in the literature, it further confirms my choice of the socio-cultural approach as appropriate.

Part B

2.12 **Socio-cultural theory**

As I have established in Part A of this literature review, there is a pressing need to examine lecturers' engagement with teaching and learning technologies in higher education from a socio-cultural perspective. Socio-cultural theory perceives human activity as a socially situated and culturally mediated

phenomenon. This enquiry aims to understand the impact of cultural context on lecturers' engagement with the VLE Moodle. As such, the gaze is on human activity in a particular setting, mediated by technology. Socio-cultural theory is well-positioned to support this enquiry as the basic goal of the socio-cultural approach is to construct an account of human mental processes, while recognising the crucial relationship between these processes and their cultural, historical and institutional settings (Wertsch, 1993). This aligns with my focus in this study whereby I aim to understand how lecturers engage with Moodle in a particular context and how it impacts on that engagement.

Socio-cultural theory is rooted in the cultural historical tradition, which originated from the work of the Russian psychologist Lev Vygotsky on social formation of mind. Vygotsky provides a theoretical framework which rests on the concept of mediation by psychological tools or cultural artefacts (Daniels, 2008b). Scholars (Engeström, 1987; 2001; 1999a; Bernstein, 1996; Wertsch, 1998; Cole, 1996; Daniels, 2008b) have interpreted and extended Vygotsky's work, providing theoretical constructs and insights which I draw upon in this study to develop an understanding of the impact of cultural context on lecturers' engagement with Moodle. Vygotsky's theme of mediation—how humans mediate their world through the use of tools and signs—is of particular interest in this study as an understanding of mediation is crucial for an appreciation of how culture enters the psychological processes. Wertsch (1993) notes that in Vygotsky's socio-cultural approach to mind he claims that higher mental functioning is mediated by tools (technical tools) and signs (psychological tools). Tools are artificial in that they are not given by nature but created by human beings in the course of their social life (Hassan, 2002). Vygotsky (1960/1981, p. 137) distinguishes between technical and psychological tools: "a technical tool alters the process of a natural adaptation by determining the form of labor operations" while a psychological tool such as a sign, "changes the entire flow and structure of mental functions" (Vygotsky, 1960/1981) thus restructuring behaviour.

For Vygotsky technical tools are used to bring about changes in other objects; for example, using Moodle could bring about changes in a lecturer's pedagogic practice. Technical tools change the very nature of human physical performance, whereas psychological tools are devices for mastering mental processes by transforming natural human mental activity into higher mental functions, thus influencing the mind and behaviour of oneself or others. He gives examples of psychological tools including language, writing, counting systems and conventional signs (Vygotsky, 1960/1981, pp. 136-37). Kozulin (1998) concurs, asserting that language is an external form of a psychological tool. This suggests that lecturers talking about Moodle could be a meditational tool that could potentially shape, and be shaped by, how they think about it in their practice. The existence of meditational means encourages us to think about the mind as something "distributed" within an environment rather than as a collection of computational processes existing only in our heads (Crook, 1996). This theoretical perspective is helpful in this study where the focus is on understanding the relationship between cultural context and lecturers' engagement with Moodle as it is an inclusive approach, instead of the more traditional view where cognition and ability are seen to reside solely inside the individual (which inevitably leads to disregard for social, situational and cultural contexts). Instead, distributed cognitions are seen to be "stretched over" and "in between" (Cole, 1991; Lave, 1988) and composed in a system which comprises an individual, their peers, teachers and culturally provided tools.

Socio-cultural theory views an individual as a cultural and historical subject, situated within, and constituted by, a network of social relationships and interactions with the culture under study (Kaartinen, 2009), thus implying that context and knowledge are mutually dependent; in other words, cognition is socially constituted. As such, taking a socio-cultural approach in this study orients me to think of lecturers' engagement with Moodle in relation to the network of values, relationships and artefacts that exist in their cultural context. Following Vygotsky's (1978) concept of tool mediation—when people meet an object in their environment (a stimulus), they interpret and act upon it through the mediation of tools—one could expect to see a tool such as Moodle having an

impact on the structure of lecturers' labour operations such as changing or reorganising their pedagogic practice. In other words, we can view Moodle as a technical tool that lecturers could use to mediate their teaching practice. Wertsch (1998) posits that new tools transform action because they determine the structure and flow of action. However, as I have established earlier in Part A of this literature review, TEL has generally not had this kind of impact in pedagogy. Thus, it is necessary to examine this issue more fully to understand how lecturers actually act in their pedagogic practice when they have access to a tool such as Moodle.

Taking a socio-cultural approach necessitates a closer look towards Vygotsky's notion of tools. Cole (1996) suggests that the concept of tool should be considered a subcategory of the notion of artefact (artefacts being something humans create—for example, language). Cole (1996) adopts Wartofsky's (1979) definition of artefacts (including tools and language): they are objectifications of human needs and intentions, invested with cognitive and affective content. If, as Vygotsky suggests, psychological tools—which Crook (1996, p. 51) reminds us include "institutionalised relationships" and "ways with words"—reorganise the structure of human behaviour, then an investigation of the lecturers' discussions around Moodle and their pedagogic practice should illuminate their behavioural practices. I see the lecturers' discourse as a psychological tool and Moodle as a technical tool; both are cultural artefacts in the lecturers' cultural context. Crook (1996) observes that in particular settings communication practices are crafted and refined in order to convey interpretive practices to others in the cultural context. In other words, social phenomena are socially constructed through discourse. This means that language is crucial to social interaction. For Vygotsky (1978) it is a sign system used as a psychological tool which, he stresses, has its origins in social activity. Hasan (1992; 1995) and Wertsch (1985; 1993) noted that while Vygotsky developed a theory of semiotic mediation in which the meditational means of language was foregrounded, his work presents very little by way of a theory of language use. There is an absence of how language is used to serve interpersonal functions. However, post-Vygotskian scholars have addressed the issue of language. For example, Hasan (1996) accurately notes the

importance of language when she states that, “among all the semiotic systems operative in a community, language has the potential of representing the reality that is lived by members of the community in their everyday existence” (1996, p. 158). Drawing on this socio-cultural interpretation of language logically leads me to think of collecting and analysing the discourse artefact produced in the lecturers’ work context in order to understand why lecturers act in a particular way in relation to the tool Moodle. Social languages and communicative forms are associated with different forms of social practice. They are the medium through which communication and human action are organised; they are “mediating artefacts” (Daniels, 2001, p. 64). Crucially, Daniels (2001) stresses the relationship they have with the activity within which they arise, and he believes there is a need to focus on mediated action as a unit of analysis in the socio-cultural approach.

Mediated action is important because it is understood as the medium through which language and speech arise. If we think of Moodle as a tool that potentially mediates lecturers’ pedagogic activity, it becomes necessary to examine the language and speech that arises among lecturers in that activity in order to understand the lecturers’ thinking on Moodle. Cole (1996) and Wertsch (1993) also emphasise the importance of mediated human action: “When action is given analytical priority human beings are viewed as coming into contact with, and constructing, their surroundings through their actions” (Wertsch, 1993, p. 8). Influenced by this perspective I draw on Engeström’s (1987) work on the Cultural Historical Activity Theory (CHAT) framework, which focuses on human activity as the unit of analysis. CHAT focuses on how individuals use cultural tools, in contrast to approaches that examine the environment or human beings in isolation. Drawing on Engeström’s framework necessitates viewing lecturers in their everyday setting and seeing this as constituting a form of collective social activity with specific forms of interpersonal communication. When lecturers interact with one another in their work context they use social languages and forms of talk. For this study it is important to qualitatively examine this mediating artefact (the discourse produced) in attempting to understand the psychological functioning of lecturers and their activity with Moodle. I return to

the notion of forms of talk and how they are generated in different social contexts in section 2.25 when I draw on the work of Basil Bernstein.

In summary, Vygotsky's work directs us towards understanding human behaviour as a socio-cultural phenomenon. By focusing on how people mediate their world through the use of technical and psychological tools, one can develop insights into human mental functioning. Adopting Engeström's activity theory, which has a Vygotskian root, facilitates a study of mediated human activity. By conducting an analysis of the discourse artefact that arises through lecturers' activities with Moodle, I aim to gain an insight into the lecturers' mental functioning as it is shaped in the cultural context they inhabit. In the next section I discuss activity theory.

2.13 Cultural Historical Activity Theory – a theoretical framework

The approach to mediated human activity which I consider most relevant to this study emerges from Engeström's post-Vygotskian work, namely Cultural Historical Activity Theory (CHAT), more commonly referred to as activity theory. Activity theorists are interested in analysing the development of mental functioning within the social settings where practical activity takes place. As such, activity theory is a suitable framework to provide a powerful and expansive unit of analysis through which to explore lecturers' practical activity with Moodle in the context of their work setting. In this section I explain the development of activity theory in what we now know as its three generations of existence. I show how it helps my analysis of a group of lecturers' transformation of their pedagogic practice around the use of Moodle.

2.14 First generation activity theory

The origins of activity theory lie in the Soviet psychology of the 1920s initiated by Vygotsky and his colleagues A. N. Leont'ev and A. R. Luria.

The development of activity theory, which includes various interpretations and theoretical positions, can be represented by three distinct generations (Engeström, 2001) as examined below. First generation was characterised by

Vygotsky's concept of mediation and the way in which he brought together human action and cultural artefact, as shown in the triangular formation in Figure 2.1.

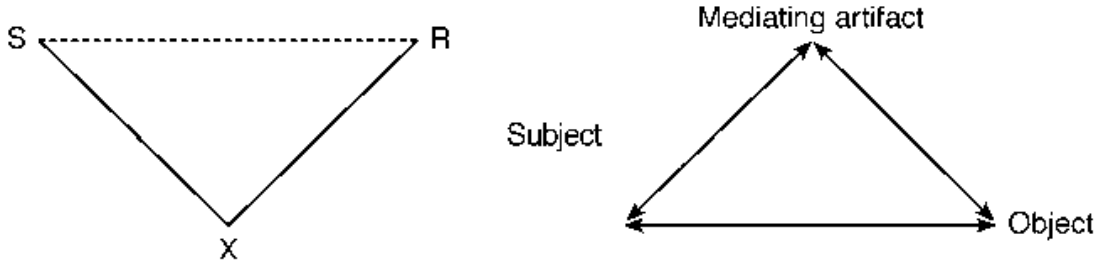

Figure 2.1: Vygotsky's model of mediated activity and its common reformulation (Engeström, 2001)

As Engeström (2001) pointed out the concept of mediated activity as the unit of analysis was an important contribution to psychology because it meant that "the individual could no longer be understood without his or her cultural means; and the society could no longer be understood without the agency of individuals who use and produce artefacts" (2001, p. 134). From this conception the focus was on individual human action and the mediation with artefacts while working towards particular objects and motives to reach a particular outcome (1999a). Wartofsky (1979, p. 205) crucially noted that "artefact is to cultural evolution what the gene is to biological evolution". Engeström (2001) depicts Vygotsky's conceptualisation of mediation in the diagram below:

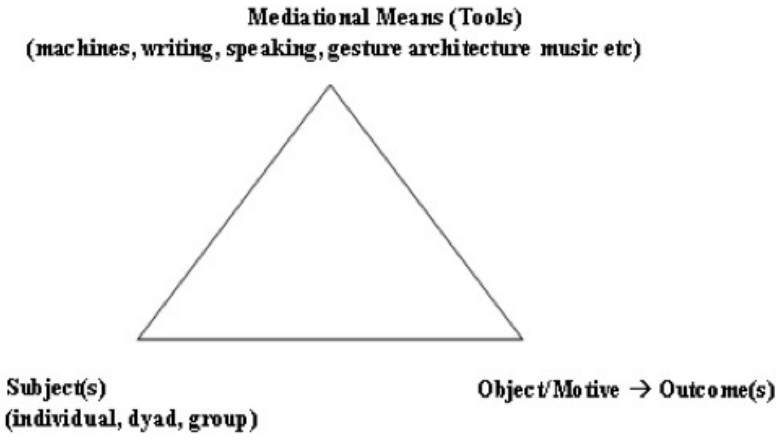

Figure 2.2: An activity system (Engeström, 2001)

Two other key lessons from Vygotsky incorporated into the development of first generation activity theory are (i) his belief that human psychological functioning is historical, i.e., it is necessary to trace people's historical development in order to understand them; and (ii) Vygotsky's concept of the zone of proximal development, i.e., that human development should always be seen as potential that can only be revealed when human beings are put in a situation where they can rely on support from, or interplay with, others and their cultural resources. However, Vygotsky's interpretation of activity was limited as it focused on the individual and ignored the fact that individuals operate in communities where roles, responsibilities and different viewpoints come into play. This limitation led to the development of the second generation of activity theory.

2.15 **Second generation activity theory**

The second generation of activity theory emerged in the 1960s and 1970s during the international student movement. The original triangular formation was expanded to include the social elements (Engeström, 1987; Leont'ev, 1981). The three foundational ideas of the second generation model are (i) the distinction between activity, action and operation; (ii) collective activity is the key unit of analysis; and (iii) focus on action and motive. These ideas are based on the work of Leont'ev (1978). He focused on the object of activity by distinguishing between the overall and immediate goals of activity. Leont'ev (1978) described activity as consisting of three levels: (i) the highest level of the activity provides an overall motive—to transform the object into an outcome; (ii) the middle level consists of an individual or group action motivated by a goal; and (iii) the lowest level consists of automated operations driven by tools and thus influenced by conditions in the setting. This hierarchical structure is depicted in the diagram below:

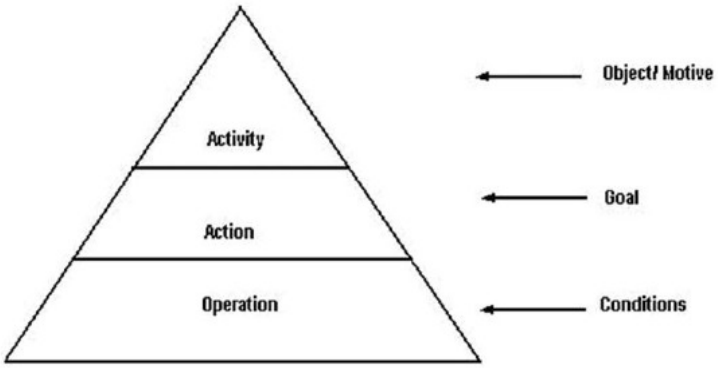

Figure 2.3: The hierarchical structure of activity (Daniels, 2001)

Leont'ev (1978, pp. 62-63) used the example of a primitive collective hunt to illustrate these abstract concepts and show how the division of labour separates action from activity. The motive for the activity is found in the activity's object, i.e., the hunted animals that potentially provide food and clothing for the hunters. One member of the collective hunt may have the role of frightening the animals away and towards other hunters. If we look at the motive for this action as purely an individual formation, it is senseless—the individual is frightening away the animals that they need for survival. However, if we look at this action in the context of a division of labour of the collective activity, this individual action is both sensible and rational (Leont'ev, 1981). Thus, an action is a process that aims at collaboration in order to reach the motive of the activity, and the actions can be understood only in conjunction with its motive (Leont'ev, 1981). Activity is realised through observable actions to which achievable goals are attached. Leont'ev's primitive hunt example also implies the importance of the division of labour as a key concept in activity theory. From this perspective activity is a systemic unit. Leont'ev (1978) asserts that activities are distinguished from one another by their different objects. The object is the true motive of activity; when a need meets an object, it becomes a motive. We can say that human needs reside behind each activity. An activity is directed towards an object of this need. There is no activity without an object.

While Leont'ev (1978) expanded the concept of activity by explaining the role of mediating cultural artefacts, he never expanded Vygtosky's original model into what we call a collective activity system; rather, Engeström (1987) who expanded the first generation triangular formation of activity theory and thus advanced the development of activity theory. Engeström wanted to enable an examination of systems of activity at the macro level of the collective, instead of a micro level concentration on the individual agent operating with tools. For this reason, Engeström's (1987) expansion of activity theory includes the elements of community, rules and division of labour, and it emphasises the collective interaction of all the elements in an activity system. Individual actions are embedded within, and take meaning from, a collective group which is directed towards the same object. Engeström promotes the study of tools or artefacts "as integral and inseparable components of human functioning" (Engeström, 1999c), arguing that the study of mediation should focus on its relationship with all components of an activity system. Figure 2.4 shows the triangular formation of Engeström's (1987) second generation of activity theory.

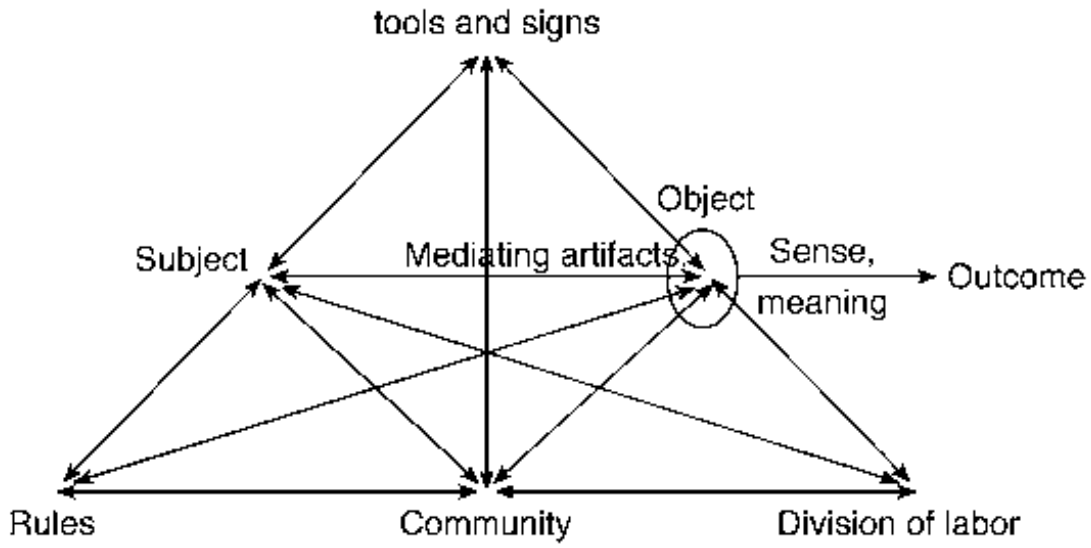

Figure 2.4: The structure of a human activity system (Engeström, 1987, p.78)

2.15.1Five foundational principles of activity theory

Activity theory encompasses five foundational principles, as formulated by Engeström (2001). These principles relate to the internal dynamics of activity systems. They are useful as a way of orienting one's thinking; for example, in this study I utilise them to deepen my understanding of the complexity of the activity system of a group of lecturers, which is my unit of analysis.

The five principles are: (i) a collective, artefact-mediated, object-oriented activity system is taken as the main unit of analysis; (ii) multi-voicedness; (iii) historicity; (iv) contradictions; and (v) expansive transformation.

(i) In the first principle of activity theory, the unit of analysis is "a collective, artefact-mediated and object-oriented activity system" (Engeström, 2001, p. 136), as opposed to that of an isolated individual. The *object* refers to the "raw material" or "problem space" at which the activity is directed. The object is moulded or transformed into *outcomes* with the help of physical and symbolic external and internal tools (Engeström, 1993, p. 67). It precedes and motivates activity. The oval depiction of the object indicates that object-oriented actions are always—explicitly or implicitly—characterised by ambiguity, surprise, interpretation, sense making and potential for change (Engeström et al., 1999). The outcome is the results or consequences that the subject finds once the activity is completed (Engeström, 1993). The concept of activity is understood in the context of the complex interrelations that arise between individuals and the communities they inhabit. Activity is made up of goal-directed actions that are undertaken to fulfil an object. They are implemented through automatic operations and can be fully understood only in their cultural and historic context. As mentioned above, in this study the unit of analysis is the activity system of a group of lecturers and their engagement with the VLE Moodle in their pedagogic practice. The concept of object-oriented activity orients me to look at the lecturers with their object of teaching modules in a community where their work is mediated by tools, one of which is Moodle. The object of teaching acts as a unifying factor in the complex social setting of the participants and their various tools (psychological and material).

(ii) The principle of multi-voicedness implies that activity systems are a collection of multiple points of view, interests and traditions. Members of an activity system, like the lecturers in this study, bring with them their own diverse points of view, traditions and interests, while the system itself also carries multiple layers of history sedimented in its artefacts, rules and conventions (Engeström 2001, p. 136). The division of labour in an activity creates different positions for participants. This further establishes each participant's unique perspective on the activity system. This multi-voicedness is a source of both tension and innovation in that it demands actions of translation and negotiation. In my study the principle of multi-voicedness ensures that the unique perspective of each participant is heard. The principle of multi-voicedness is established by facilitating a process of dialogue during the investigation.

(iii) Historicity, the third principle of activity theory, implies that activity systems are shaped and transformed through time, and, therefore, their problems and potentials are best understood in the context of their own history. Thus, for lecturers the adoption of technology in their teaching practice needs to be analysed against the history of the local setting and also against the wider history of teaching and learning concepts, procedures and tools employed and accumulated in the local activity.

(iv) Contradictions are a fundamental characteristic of activity systems (Engeström, 1987) as they can result in change and development. Engeström (2001) defines contradictions as " historical accumulating structural tensions within and between activity systems". He explains that they generate "disturbances and conflicts, but also innovative attempts to change the activity" (p. 134). For this reason they should not be thought of negatively, even though they may initially be disruptive. Contradictions occur when practices that are part of one system and mutually dependent can no longer sustain one another. This can occur at various levels in activity systems—within each node of the activity system (for example, tensions within the subject or between rules), between nodes (for example, between community and rules) or between different activity systems (for example, conflicting aims between departments)

(Engeström, 2001). Núñez (2009) suggests that studies identifying contradictions fall into two categories: (i) studies where a new tool is introduced and (ii) studies where a new object is introduced to an activity system. Virkunnen and Kutti (2000) also view the adaption of new tools as simultaneously leading to contradictions and offering the potential for developing new practices. Agreeing with these scholars, I can envision that the introduction of Moodle may bring about a contradiction for lecturers, particularly if they do not know how best to engage with it. This could potentially cause a tension between lecturers' pedagogic practice (the main motive and object of the activity system) and the presence of Moodle, which, if used by the lecturers, has the potential to enhance their practice. Human beings not only act on tools in their environment but they also think and learn with them (Russell, 2002). This allows for further insights in this study because it suggests that the mere presence of Moodle in the lecturers' environment will possibly affect their thinking and learning. Furthermore, if we have a situation where one lecturer uses Moodle and another does not, or where a college department expects lecturers to use Moodle yet the norm (rule) goes against this, then the potential for contradictions arises. Situations like these signify a change in one element of an activity system which could cause conflict with another element. This places people at cross-purposes, creating a conceivable contradiction (Russell, 2002).

I note that difficulties have arisen around the interpretation of the term "contradictions", indicating a need for theoretical and conceptual rigour in its use. Vague and ambiguous uses of the term "contradiction" in the context of activity theory risks a loss of theoretical content and analytical power (Engeström and Sannino, 2011). Scholars have tended to define contradictions broadly. For example, Berge and Fjuk (2006) describe contradictions as tensions or disruptions, while Kuutti (1996, p. 34) terms them "problems, ruptures, breakdowns, clashes" in activities. In Osno, Shimizu and Takeuchi (2008) the interpretation of contradictions is reduced to competing priorities which need to be balanced in order to find a resolution. In activity theory contradictions should be understood as incompatibilities or opposites. To avoid misinterpretations and overcome the lack of systematic efforts in identifying contradictions (Murphy and Rodriguez-Manzanares, 2008), Engeström and Sannino (2011) devised a

framework where contradictions can be identified only through their discursive manifestations. The framework specifies the following:

(i) Double bind—where participants in an activity system face equally unacceptable alternatives.

(ii) Critical conflict—where participants in an activity system face contradictory motives in social interactions and feel violated or guilty.

(iii) Conflict—where participants of an activity system argue among themselves and criticise one another.

(iv) Dilemma—where participants of an activity system express or exchange incompatible evaluations.

Employing Engeström and Sannino's (2011) framework in this study facilitates an analysis of the tensions and contradictions that arise in the lecturers' discourse artefact as a result of having Moodle in their activity system. The use of this framework also differentiates this study from earlier studies (Basharina, 2007; Berge and Fjuk, 2006; Blin and Munro, 2008) in which researchers analyse interview and observational data by looking for instances of conflict between participants in order to identify one of Engeström's (2001) levels of contradictions. Using Engeström and Sannino's (2011) framework, however, provides a systematic approach to the analysis of discursive manifestations of contradictions.

(v) The fifth principle of activity theory, expansive transformations, builds on the notion of contradictions. As contradictions in an activity system are aggravated, some individual participants may begin to question and deviate from the established norms (Warmington et al., 2004). This may escalate into collaborative envisioning, resulting in a collective change effort where the object and motive of the activity are reconceptualised and embrace a wider range of possibilities than before. Engeström theorises this potential for transformation of the activity system as expansive learning, which is further developed in the third generation of activity theory.

2.16 Third generation activity theory

In order to expand the unit of analysis from one activity system to at least two interacting activity systems, Engeström (2001) developed third generation activity theory. Instead of viewing activities as isolated units, they are viewed more like nodes in crossing hierarchies and networks, and they are influenced by other activities and changes in their environment (Kuutti, 1996). The focus of the third generation shifts to developing conceptual tools to understand dialogues, multiple perspectives and networks of interacting activity systems. When the focus is on multiple interacting activity systems, we look at their shared objects and their contradictions. The issue of finding a common object becomes crucial. The minimal representation shown in Figure 2.5 illustrates two of what may be myriad systems that exhibit patterns of contradiction and tension.

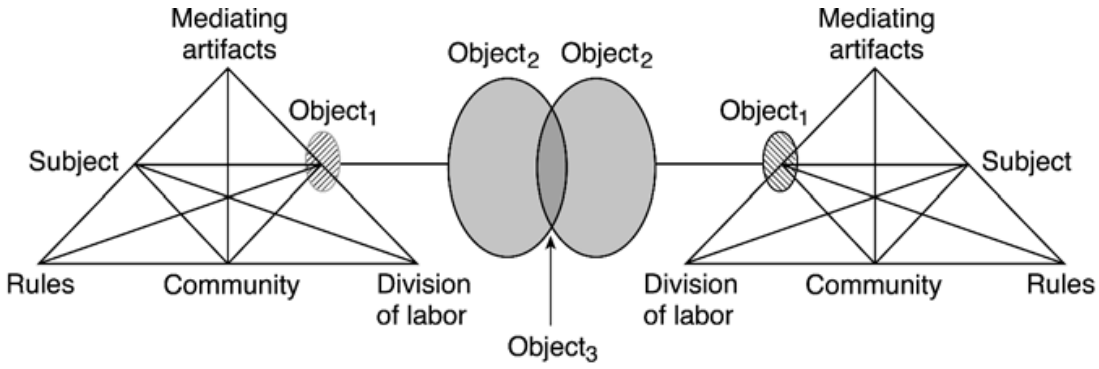

Figure 2.5: Two interacting activity systems; a minimal model for the third generation of activity theory (Engeström, 2001)

The transitions and reorganisations within and between activity systems are part of the constant evolution of the activity system. As Daniels (2011) asserts it is not only the subject but the environment that is modified through mediated activity. A higher education institute is a good example of a setting where this type of interaction occurs as there are multiple interacting agencies and groups. Engeström (2001) investigated a health care system where multiple departments were simultaneously involved in patient care. He examined how change was driven by the structural tensions and contradictions of the parties involved, the resolution of which led to improved patient care. This perspective of observing interacting activity systems enables the idea of learning and

knowledge transfer across boundaries. Another example is found in Finlay (2008), who studies individuals who are lecturers and also study teacher education. They used a variety of tools, including new ideas, theories and teaching strategies, from their teacher education course to help them in their workplace. These examples show how the relationship between different spaces, such as work places, services and universities, can be reconceptualised as interacting activity systems. This concept of viewing connecting spaces as collaborating activity systems provides a suitable framework for interpreting different schools or departments—academic or administrative—in a higher education institute, as it can be conceptualised as many interacting activity systems.

2.17 The concept of cultural context in activity theory

At this point in the discussion it is important to examine the notion of cultural context. For activity theorists it is the place where mental functioning develops through activity. I am drawn to Cole's (1996) metaphor for understanding cultural context. Cole sees culture as a medium, and he sees "context as both that which surrounds and that which weaves together". He suggests that we think of context as "the connected whole that gives coherence to its parts" (Cole, 1996, p. 135). Daniels (2001) agrees with Cole but emphasises looking at the connected whole, particularly the more elusive parts, when trying to understand a pedagogic practice. This view is also espoused by scholars of organisational culture (Martin, 1992; 2002; Schein, 1997), who highlight the importance of the artefacts in the organisational environment when trying to understand culture. Artefacts are understood in the Vygotskian sense of tools (psychological and material) which mediate an individual's environment. The cultural context is therefore understood in terms of the intricate relationship between the roles, artefacts, basic assumptions, norms and behaviours of which it is comprised (Martin, 1992).

Crook (1996) asserts that a biological view of culture as a medium through which living material is supported is helpful in clarifying the sense of the term "culture" (as I adopt it in this study). He further suggests that any account of

human cognition and learning should incorporate the notion of culture as a medium comprising historically developed artefacts, rituals and practices which support human activity. Staying with the biological view of culture, Cole (1996) adopts a garden metaphor, thus encouraging us think of culture in an ecological sense. The gardener is concerned with circumstances both inside and outside the garden, but both sides are interrelated. Tasks inside the garden require their own tools, beliefs and knowledge, and the correct combination of these factors promotes growth and development in the garden. But the circumstance surrounding the garden—i.e., the system in which the garden is embedded—also requires attention to ensure the garden's development. Both Crook's and Coles' ideas are helpful in envisioning the human social and cultural interaction in a given context. In terms of ecology one can see how a context can be influenced by a single disturbance, as a ripple effect may be felt through the ecological space. Applying Cole's garden metaphor in this study orients me to think of Moodle's entrance into lecturers' pedagogic practice as possibly having a ripple effect in their social context, and this needs to be examined. Drawing on this idea of culture as a medium for supporting human activity, it is logical to think of lecturers' engagement with Moodle as a contextual phenomenon, thus emphasising the need to focus an exploration of the same in a particular situation. It also discourages any thoughts of understanding this phenomenon in terms of a small number of core cognitive processes. Instead, I am encouraged to understand the lecturers' activity with Moodle as an outcome of their engagement with the cultural context they inhabit daily and, furthermore, to look at how the cultural resources of that context both constrain and enable their cognitive activity.

2.17.1 Cultural context, artefacts and tools

For Cole (1996) artefacts are a key component of culture, and tools can be considered a subcategory of the notion of artefact. This idea arises as Cole (1996) follows Bakhurst (1995), who draws from the Russian philosopher Illenkov. Crucially, Illenkov theorises artefacts as simultaneously ideal (conceptual) and material. An artefact is created for a particular reason; it is a material object. It is put to use, therefore becoming significant in life's activities. It is this significance

that makes it ideal and separate in every way from its material existence (Bakhurst, 1995). This implies that we can view an object as an embodiment of meaning which is placed and sustained in it by object-oriented human activity. In this study we can interpret Moodle as being significant for lecturers based on the meaning they attribute to it in their practice. This view is attributed to Illyenkov's philosophy of "ideality". It provides an account of how humans give significance and value to the physical objects of their environment; as Bakhurst (1990, p. 182) notes:

> (...) in being created as an embodiment of purpose and incorporated into life activity in a certain way – being manufactured for a *reason* and put into *use* – the natural object acquires a significance. This significance is the "ideal form" of the object, a form that includes not a single atom of the tangible physical substance that possesses it.

Bruner (1996) further advances Bakhurst's view when he contends that an innate characteristic of cultural expression is meaning making. He suggests that:

> Although meanings are "in the mind", they have their origins and significance in the culture in which they are created. It is this cultural situatedness of meanings that assumes their negotiability and, ultimately, their communicability.
>
> (Bruner, 1996, p. 3)

With regard to this current study, cultural context is significant as the place where the meaning lecturers attribute to Moodle is created. For Bruner (1996) the working of the mind situates learning and thinking in a cultural context, and, as such, there is a dependency on the resources available in that context. In this study, following Cole and Bruner's thinking and Illyenkov's notion of "ideality", I am oriented to understand how the lecturers' thinking emerges and is shaped in a particular context where Moodle is available. If lecturers' thinking emerges in their cultural context, where they are dependent on the available resources, then, since scholars have found that engagement with teaching and learning technologies is generally low among lecturers, we must explore the relevant contexts to see if they exhibit a lack of relevant supportive resources or if the available resources are constraining the lecturers in engaging with Moodle. More specifically, we must look at how lecturers make meaning through the creation

and transformation of activity in the mediated social environment where their object-oriented activity takes place.

2.18 Tools and transformation in activity theory

This focus of activity theory facilitates an analysis of cultural contexts within the institutional structures that influence everyday action, as well as the meaning that individuals attribute to their interaction. Activity systems are composed of humans in their natural environments; they are dynamic forces constantly moving and changing through time as a result of cultural and environmental influences (Cole et al., 1997). Therefore, each historically-formed, mediating element (subject, object, tools, etc.) is open to continuous modification and change. When change in a mediating element is significant enough to result in change in organisational practices, it is called transformation (Engeström, 2001). Activity theory orients me to think of Moodle as a (technical) tool that lecturers use to mediate their pedagogic activity. In activity theory tools are understood in the Vygotskian sense as having either a technical or a psychological nature, and they are used to bring about changes in other objects. Through tool-use things that were once out of reach can become possible. As Wertsch (1998) notes, tools afford human beings the opportunity to solve problems. Human beings use technological or concrete tools in performing labour, and these tools change the very nature of human physical performance. This perspective provokes some thought on the use of the technical tool Moodle.

In Part A of this literature review, I discussed how a sense of uncertainty and unfulfilled potential surrounds the use of TEL in higher education. We have seen how technologies, such as the computer, the internet and social media, have transformed the world in a manner as fundamental as that of speech, writing or printing (Lompscher, 1999). Yet, there is little evidence to suggest that technologies like Moodle have actually changed the form of lecturers' teaching operations in the same way as Vygotsky-proposed tools. This prompts further questioning and thought about Moodle as a tool. If lecturers are to engage with Moodle, two points need to be considered. Firstly, is the tool suitable for their needs, i.e., will it produce the desired outcome? Secondly, in order to engage with

Moodle lecturers need to develop skills to use it in pedagogically meaningful ways. If these issues are not given attention, the desired outcomes of Moodle, and indeed technology-use, will not be achieved. This prompts the conclusion that learning is required if we are to witness any kind of change or transformation in lecturers' engagement with Moodle. Following Vygotsky (1978) I believe that learning is a social activity, but also that any account of human learning and cognition must take the rich complexity of the cultural context where that learning takes place into consideration (Crook, 1996; Cole, 1996). Expansive learning as an application of activity theory in a higher education setting offers a useful perspective from which to investigate change and transformation because it views learning as expanding involvement, both socially and intellectually (Russell, 2002). Expansive learning provides a way of exploring the complex social and cultural issues surrounding lecturers' engagement with Moodle. It is, therefore, the subject of discussion in the next section.

2.19 Expansive learning as an application of activity theory

The design of a new activity, such as lecturers engaging with a new tool like Moodle in their pedagogic practice, and the acquisition of skills and knowledge it requires are intertwined. Expansive learning emerged as a result of modern forms of work where, often as a result of technology and innovation, learning is triggered by rapid changes in product, service and business concepts (Engeström and Sannino, 2010). A useful definition of expansive learning is:

> By expansive learning we mean the capacity of participants in an activity to interpret and expand the definition of the object of activity and respond to it in increasingly enriched ways. […] Expansive learning involves the creation of new knowledge and new practices for a newly emerging activity: that is, learning embedded in and constitutive of qualitative transformation of the entire activity system.
>
> (Daniels et al., 2007b, p. 523)

Increasingly, as work practices become more societal in nature, particularly in periods of acute disturbance or intensive change, no one actually masters the

work activity as a whole. Instead, “grey zones” or a “no man’s land” emerge wherein “initiative and determined action from any level of the corporate hierarchy may have unexpected effects” (Engeström, 1987, pp. 113-114). Conversely, one can say that traditional learning deals with tasks where contents and learning outcomes are well-known ahead of time by those who design, manage and implement various programmes of learning. Engeström (2001) considered this to be a weakness in the ability of standard or traditional learning theories to explain the processes involved in learning for modern work environments. Expansive learning is aimed at addressing this weakness, whereby learning is considered a suitable theoretical lens through which to understand how the design of a new activity and the associated acquisition of required knowledge and skills are merged (Engeström, 1999a). Expansive learning aims to do this through the collective transformation, experimentation and design of new activities, with the help of analysis of their contradictions. Crucially, it gives rise to the formation of a new, expanded object and pattern of activity oriented towards that object (Engeström and Sannino, 2012). Applying this perspective in this study could afford lecturers the opportunity to reconceptualise the object (teaching) of their activity and expand their pedagogic practice by critically evaluating their engagement with Moodle.

In recent years expansive learning has been used in research across a broad range of topics. For example, organisational learning (Schulz and Geithner, 2010; Saari and Talja, 2009), adult mathematics learning in workplaces (Fitzsimons, 2003), the impact of ICT reforms on teacher education (Rasmussen and Ludvigsen, 2009) learning in, and for, interagency working (Daniels, 2004) and boundary breaking in a hospital (Kajamaa, 2011). This variety of applications of expansive learning theory indicates that it is particularly useful in the analysis of learning in non-traditional, hybrid and multi-organisational settings. The variety of applications also bears testament to the potential of expansive learning to be used as a concept to shape change in human activity. In this study lecturers’ engagement with Moodle in their pedagogic practice adds to the wide variety of applications of expansive learning as it signifies a move to a non-traditional mode of practice.

While expansive learning is a relatively recent theory, Engeström acknowledges that earlier learning theorists (Bateson, 1973; Davydov, 1988) provided resources for its development. For example, the work of Bateson (1973) concluded that the questioning of the context with a view to creating an expanded context is triggered by a double bind which Engeström (1987, p. 165) suggests can be understood as a social dilemma that must be solved by cooperative actions, leading to the emergence of a new form of activity. Engeström advanced Bateson's idea by developing it into a systematic framework which examines the entire activity system in which learners are engaged. Engeström (1999c) aptly drew from Davydov (1988) by positing the view that this type of learning moves from the abstract to the concrete, suggesting that there is movement from the initial idea or "germ cell" to the point of implementation, where the idea becomes practice through epistemic or learning actions.

2.19.1Expansive learning cycles

For Engeström (1999a) expansive learning is often a cyclic process involving a sequence of actions. Firstly, individuals question if the context in which they conduct their activities is meaningful to them. They question aspects of conventional wisdom and practice based on tensions and contradictions they experience. Secondly, they analyse their situation based on the historical context from which it arose. From this they see the structure and operation of the activity system in which they engage, and they can construct a model that proposes a solution to their problematic situation (Engeström, 1999a). Thirdly, they examine the model for its potentials and limitations. The fourth act is where the model is implemented. This represents a move from an initial abstraction to a concrete entity brought into practice as a conceptually superior entity to that which existed previously. Finally, the individuals review the implementation of the new practice, which is ultimately consolidated into an established activity.

Engeström developed this expansive learning process as a collective endeavour, with emphasis on transformations and creation of culture. For Bateson (1973)

the questioning of context was seen as "difficult and risky as it means stepping outside of what has been acceptable" (p. 277). But Engeström (1987) boldly went further: his work demonstrated how effort and toleration of such difficulties can be liberating and rewarding in that they offer the opportunity for change and development.

2.19.2 Understanding lecturers' use of teaching technologies through expansive learning

Expansive learning occurs in environments where the participants—in this study, lecturers engaging with Moodle—are learning something new which had not existed previously in their context. Expansive learning implies a type of learning that transcends the traditional interpretation, whereby an individual or group of individuals acquire specifiable knowledge from a competent teacher who knows what has to be learned. Expansive learning suggests the formation of a body of knowledge which is different to that often referred to as the zone of proximal development (ZPD). According to Engeström (2001) expansive learning occurs in an environment in which learning is not always stable, as members strive to realise equilibrium in the activity system to which they belong. As such, he cautions researchers when applying expansive learning not to expect nicely linear results from their efforts (Engeström and Sannino, 2010).

For lecturers the introduction of technology into their traditional teaching practice is an example which requires them to reconceptualise their teaching practice in order to integrate it with technology. Arguably, this requires expansive learning, which is aimed at reconceptualising and reorganising entire collective activity systems (Engeström and Sannino, 2010). Interestingly, Conole (2010), approaching the issue from an educational technology perspective, calls for the need to reconceptualise our best processes in teaching and learning in higher education, stating that information flow is radically different in a digital world. Conole's assertion that the problems with lecturers' integration of technologies with their pedagogic practice need to be addressed through a reconceptualisation of teaching practices can, I believe, be achieved through the application of Engeström's expansive learning.

Engeström (1987) emphasises the importance of expansive learning as a collective activity when he draws on Bakhtin's (1982) notion of multi-voicedness. This implies its essence as a process of debate, negotiation and orchestration. Daniels (2008b)concurs with Engeström that expansive learning brings about a qualitative transformation of an entire activity system, and adds that such a transformation may be triggered by the introduction of a new technology. Agreeing with Daniels I believe the introduction of a new technology has the potential to historically transform a work practice. Thus, it influences my choice of expansive learning as a theoretical lens through which to understand how lecturers' thinking may be transformed when Moodle is introduced to their work context. Combining the ideas that a new technology can trigger transformation (Daniels, 2008b)and that what needs to be learned about this new technology (Engeström and Sannino, 2010) is undefined, I believe that uncertainty is a key issue surrounding the adoption of technology. This is evidenced by scholars who question why education has not been transformed by new technologies. I endeavour to remove at least some of this uncertainty by applying the theory of expansive learning to investigate lecturers' engagement with Moodle and possibly reconceptualise the issue in one context in a higher education institute.

The context of an Irish institute of technology is of central importance in this study as teaching within this context is individual and private, and, despite lecturers' positive experiences of teaching, they are often under pressure from a system that leaves them feeling isolated and under threat (Palmer, 2009). As expansive learning is a collective activity based on dialogue and debate (Engeström, 1987), the challenge of conducting a collective dialogical process arises in a context where lecturers may operate mostly as private, autonomous and often isolated individuals, the challenge of conducting a collective dialogical process arises. Responding to the challenge I note how applying expansive learning naturally orients me towards Developmental Work Research (DWR), an intervention methodology which facilitates transformation in activity systems. Intervening in the lecturers' practice seems the logical route to understanding this complex phenomenon more deeply. DWR is the subject of the next section.

2.20 **Applying expansive learning through Developmental Work Research (DWR)**

DWR was developed by Engeström and his colleagues at the University of Helsinki as an interventionist methodology for applying CHAT and, more specifically, the theory of expansive learning in the world of work, technology and organisations (Engeström, 1996). Central to DWR is the creation of an environment which provides and/or develops tools that allow individuals to move beyond themselves and the problematic situations in their workplace through a series of intervention sessions known as the Change Laboratory (Engeström, 2007c). Throughout the intervention sessions the researcher (interventionist/facilitator) and participants engage in a dialogic process which enables the participants to focus on the work practices comprising their organisational routines. During this process the objects with which they interact are often reconceptualised, reframed and transformed. According to Engeström (2007c, 370)

> The Change Laboratory method develops work practices by the participants in dialogue and debate among themselves, with their management with their clients, and – not the least – with the interventionist researchers. It facilitates both intensive, deep transformations and continuous incremental improvement.

The intention of DWR interventions is to resolve double binds that impinge on conducting functional organisational activities. DWR interventions are based on two foundational methodological principles: double stimulation, which is based on Vygotsky's idea of scientific experimentation, and ascending from the abstract to the concrete, which is drawn from the work of Davydov (Sannino, 2011). Together they make transformative agency a third principle of DWR formative interventions (Engeström et al., 2014).

Engeström (2007c) draws on these two principles in theorizing how humans mutually shape themselves and their environment through participation. The objective of double stimulation is the creation of a structured environment where the participants are presented with a problem (first stimulus) and provided with the analytical tools (second stimulus) which are needed to

develop a solution. As the participants engage with the object of their activity in a dialogic process, they emerge with a clearer understanding of their activity through a critical consideration of the contradictions in their activity system (Engeström and Sannino, 2010). For example, the double stimulation in this study is giving a group of lecturers the task of assessing their engagement with Moodle in their teaching practice (first stimulus) and then giving them the theoretical tools of activity theory (second stimulus) with which to make meaning and reframe the task. This should illuminate the nature of, and reasons for, the lecturers' engagement, or lack thereof, with Moodle.

In Engeströmian Change Laboratories the spatial arrangement of the laboratory is specified. It focuses on a set of three surfaces which represent the work activity occurring in a historical context, using indicators from the past, present and future to contribute to the discourse as the participants work through the process of examining their problem space. The three surfaces are used as follows:

(i) A mirror surface displays problems and disturbances from the daily work activity that contribute to tensions and contradictions in the activity system.

(ii) A model surface represents the activity system. It is used for theoretical tools and conceptual analysis. It uses historical data to make sense of issues, but it also considers the potential for change and creates a vision for the future.

(iii) The third surface displays ideas and tools to create a model of the new emerging formation as a result of the cyclic process that takes place as the participants engage with the problem space.

Employing the principle of double stimulation, a Change Laboratory session begins with a collective analysis of the contradictions that limit current activity. This is done by an analysis of data such as video-taped episodes of work, stories and interview data from the mirror surface. The researcher/interventionist then facilitates the participants by helping them to transform the everyday account of their understanding into a scientific account (concepts) using activity theory. As

the process evolves the problems are articulated in precise activity theory terms using Engeström's (1987) triangular formation. The objective is to reveal the thinking that is entrenched in the practices and to illuminate the potential for change therein. Thus, in order to understand lecturers' engagement with Moodle, Engeström's (1987) intervention process offers a basis for investigating the issue by giving the participants a space for exploring their needs and interests (Schneckenberg, 2009).

The Change Laboratory method provides instruments for developmental intervention to support collaborative learning in the transformation of work activities (Engeström, 1987). But, it is not a standardised method; instead, it has to be creatively applied in each individual case. Generally, the method has been applied in large-scale, heavily funded research projects run by a team of researchers, for example, Kerosuo et al. (2010) Daniels et al. (2007b) and Engeström (2007c). In my study, as an individual researcher with limited resources it is not possible to conduct a Change Laboratory intervention in the Engeströmian form employed in these large-scale studies. Nevertheless, it is useful to borrow ideas from the method to conduct an intervention into lecturers' practice to explore if their cultural context impacts on their engagement with Moodle. For this reason I propose to employ what I call a DWR-based Intervention methodology which allows me to work with a group of participant lecturers as "flesh-and-blood dialogue partners who have their own emotions, moral concerns, wills and agendas" (Engeström and Kerosuo, 2007). This type of investigation moves towards tackling issues of subjectivity, experiencing, personal sense, emotion, embodiment, identity and moral commitment, which Engeström and Sannino (2010) note as necessary for the future development of activity theory.

2.20.1Development Work Research (DWR) – A dialogical process

I note parallels between Engeström's notion of a dialogical intervention process and Cross's (2010) notion of informal learning. According to Cross (2010) informal learning in the workplace comes through conversations, asking questions, hearing stories, watching another carry out a task, etc. For Cross

(2010) conversation is, bar none, the most powerful learning technology. I would argue that the dialectical negotiating process of the DWR has conversation at its heart. Cross (2010, p. 50) asserts:

> Conversations are the stem cells of learning, for they both create and transmit knowledge. Frequent and open conversations increase innovation. People love to talk. Bringing them together brings excitement.

For Cross (2010) learning in the Vygotskian sense is a social activity. He sees it as coming about through collaboration, coaching and reflecting on the part of individuals in the workplace. Similar to Cole's (1996) use of a garden metaphor to explain cultural context, Cross (2010) suggests that designing a space for informal learning is analogous to landscaping a garden, i.e., creating a harmonious, unified space to support learning; thus, he calls the environment of informal learning a "learnscape" (p. 47). Like a landscape, the learnscape can be influenced but not controlled. Although Cross (2010) does not see the creation of a learnscape in the form of an intervention, as Engeström does DWR, he acknowledges that facilitating conversation has the largest payback of any interventions. I argue that drawing on Engeström's (1987) DWR methodology has the potential, particularly in a study such as this, to create a "learnscape" in which lecturers can conduct a conversation to examine their engagement with Moodle. An intervention can be thought of as a purposeful action to create change, and changing something provides a way of understanding it. Thus, intervening in lecturers' practice has the potential to help us understand lecturers' engagement with Moodle.

2.21 Expansive learning as movement through the zone of proximal development (ZPD)

In order to explain how an individual acquires learning when faced with a problem, Vygotsky (1978) advanced the concept of the zone of proximal development (ZPD). As I have discussed, applying expansive learning using an intervention methodology gives participants a practical learning opportunity from which to reconceptualise their work practices. In this section I will attempt

to explain the learning that can occur in an intervention context, based on Engeström's notion of expansive learning as movement through the ZPD.

The ZPD concept is a theoretical attempt to describe the contradiction between how psychological development occurs in learners working as individuals and learners working collaboratively with others. The ZPD is essentially the distance between what the learner can do on his/her own, and what he/she can do with help from an expert. This is often termed scaffolding (Bruner, 1996). Interpreting the ZPD, Moll (1990) suggests that the focus should be on a negotiated scaffold to include creation, development and communication of meaning through the collaborative use of meditational means rather than on the transfer of skills from the more- to the less-capable individual. Moll's theory has a lot to offer as it hints at a move towards a more collaborative process rather than a focus on an individual's learning. A cultural interpretation views the zone as the distance between the cultural knowledge that is provided by the socio-historical context and the everyday experience of individuals (Lave and Wenger, 1996). Engeström's (1987) definition is most appropriate in this study as it provides a framework for the exploration of expansive learning in the context of CHAT.

Engeström (1987) redefined Vygotsky's (1978, p. 86) definition of the ZPD by using expansive learning. He focuses on dealing with learning and development at the level of collective activities, defining the ZPD as the:

> distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in everyday actions.
>
> (Engeström 1987, p. 174).

The double bind referred to arises when individuals meet contradictory situations that constrain them in their everyday practices. A new form of their activity arrived at through expansive learning is usually the only way to resolve a double bind. I subscribe to this view. The contradictory situations provide the motive for the movement through the ZPD. It is by working collectively, using historical analysis of the existing contradictions in their work environment that

individuals chart the zone that they need to traverse in order to move beyond themselves to a new level of development (Engeström and Sannino, 2010). This is how social transformation takes place. In effect, Engeström (2001) redefined the ZPD as the space for expansive transformation from actions to activity.

This conception of the ZPD is helpful in this study because it orients me to access the social and cultural aspects of lecturers' engagement with technology that have traditionally been under-explored by researchers. As I discussed in Part A, researchers (Blin and Munro, 2008; Schneckenberg, 2009) have found that lecturers' low engagement with teaching technologies may signify a need for change in the social structure of higher education institutions. The societal perspective of the ZPD is appropriate in order to consider how such changes or transformations might be brought about through lecturers' learning as a result of their involvement in a shared activity with cultural tools. Appropriately, Lave and Wenger (1996) assert that taking a societal perspective enables a study of learning to move beyond the limits of pedagogical structuring and into the social world in a way that facilitates a central focus on the conflictual nature of social practice to explore the human subjects in each activity system (Engeström and Sannino, 2010).

I noted that lecturers are often found to work in individualistic environments (Palmer, 2009); however, the focus of the societal perspective of the ZPD is on collaborative efforts. The relevance of Engeström's conceptualisation in this study is that his idea of how people learn to perform new tasks enhances the concept that ZPDs are collective rather than individual phenomena (Lave and Wenger, 1996, p. 13). Adopting this theory one may think of lecturers engaging with Moodle as a collective rather than an individual endeavour. This also aligns with the idea of a negotiated scaffold (Moll, 1990), wherein the focus of the ZPD is on the creation, development and communication of meaning through the collaborative use of meditational means. This could potentially have implications for how we conceive Moodle training for lecturers, whereby we envisage a form of informal learning activity (Cross, 2010) in which lecturers could engage in conversations, instead of traditional training courses.

I argue that the notion of influence is also inherent in Engeström's societal notion of the ZPD. Although the notion of influence is not specifically stressed in Engeström's (2001) conception, if we think of lecturers learning in a shared collective setting (e.g. a societal ZPD), there is an implication for the notion of influence—for example, the influence of one lecturer over another/ others—as they work collectively towards resolving their difficulties. Interestingly, for Spillane (2008) this notion of influence is central to leadership and embedded in a vision of improving teaching and learning in educational settings. Both Engeström (2001) and Spillane and Diamond (2007) are concerned with improving work practices, and they see the social context as an integral component. However, I argue that Spillane's (2008) notion of distributed leadership (where leadership roles are played by multiple individuals in formal or informal positions) is helpful in this study. It encompasses the notion of influence, which Cuban (1988) reminds us can be configured as leadership, and orients us to think of how it emerges in collective activity. Thus, we can think about how lecturers are influenced to engage with a tool like Moodle. I also envisage that the notion of influence, and therefore leadership, could potentially arise in a DWR-based intervention context in which the participants themselves direct the process and, as in this study, management (the formal leaders) is not present among the participants.

Additionally, I see Valsiner's (1997) zone theory as insightful. It expands the notion of the ZPD in a way that helps to develop insights into the complexities surrounding lecturers' engagement with Moodle by considering issues of cultural renewal and innovation instead of cultural transmission. One of the shortcomings (Wells, 1994b; Wells, 1994a; Cobb et al., 1996) of Vygotsky's work is that it is more concerned with cultural transmission than it is with cultural renewal and fostering innovation and diversity. This implies that it could possibly provide insights into why lecturers use established methods with new tools, but it may not account for how to bring about transformation and development in practice. Daniels (2007) suggests it is crucial to question the social constraints and affordances that create the possibilities for the

construction of individual understanding. One means of addressing this question is Jaan Valsiner's work on a refined model of the ZPD. Valsiner (1997) expanded the notion of the ZPD to include, among others, the notion of the zone of free movement (ZFM) and the zone of promoted actions (ZPA). Valsiner's theory constitutes an interdependent system between the constraints put on the environment of the learner and the actions being promoted for the learner. The ZFM, which represents a cognitive structure of the relationship between the person and the environment, is understood in terms of environmental constraints that limit the individual's freedom of actions and thoughts (the ZPA). Thus, individuals and the cultural meaning system they bring to bear upon it socially construct this environment. In the context of lecturers, for example, we can view the ZFM as the structures that give access to technology, expertise, experience, beliefs and values, i.e., the cultural context explored in this study. The ZPA would then suggest what teaching and learning actions are possible. It represents the efforts of a lecturer or others to promote particular skills or approaches to activities within the environment. Blanton, Westbrook and Carter (2005) extended the ZPA to include what they called the illusionary zone (IZ). The IZ is based on the fact that the ZPA is not seen as binding, in that, for example, actions promoted by a teacher may not taken up by a learner and so remain an illusion for the learner. Arguably, lecturers who do engage with technologies such as Moodle may experience this illusionary zone.

Daniels (2007) asserts that the ZFM promotes canalisation through the constraints or semiotic regulation in the social setting. He also suggests that Valsiner's ZFM could be thought of like Waddington's (1951) developmental chreods model, which was originally used to explain developmental pathways in biology. Waddington uses the idea of a ball rolling down a slope to describe chreods. The ball is most likely to go down the deepest valley or canal on that slope. The available valleys should be thought of as zones of free movement. However, although likely, it is not necessarily the case that the ball will go down the deepest valley. Sometimes it can experience an environmental hit or impact which might, for example, roll it against the side of the canal and even flip it into another valley or pathway; thus, its pathway can be impeded or changed. The

further down a valley the ball goes, the less likely it is to change its pathway. The surface on which the ball rolls is not fixed; it is in motion constantly, depending on other effects in play. This is akin to a system of human activity, which is never fixed but constantly in a state of flux. This expanded concept of zones helps us to understand that in a social setting there is a shaping taking place, but it is not reducible to one effect. The reasons for a particular effect are more likely probabilistic than specifically determined.

In summary, I contend that Engeström's societal conception of the ZPD is a useful perspective from which to understand the phenomenon of how lecturers engage with Moodle, and Valsiner's (1997) extensions provide further theoretical insights. Movement through the ZPD involves change which manifests itself in expansive learning as changes in the object of the collective activity system. This is discussed in the next section.

2.22 Tracking the object of an activity system

The object of an activity system is constantly reconstituted through a dialogic process; it is not static. In formative interventions, surfacing the object of an activity becomes the focus as it is the true carrier of the motive of the activity (Engeström and Sannino, 2010). Contradictions drive change in activity systems, and, when they emerge, the object of the activity becomes visible. In the dialogic process of a DWR-based intervention, the object is a dynamic human construction, containing multiple viewpoints and interpretations. Participants, by their actions, shape and jointly construct the object. The challenge is how the participants hold the object together. The object needs enough diversity so that it can serve everybody, but also needs enough coherence so that it does not fall apart.

Engeström (2001b) suggests that expansion of the object proceeds in four dimensions: socio-spatial, temporal, moral-ideological and systematic-developmental. While these dimensions are helpful in tracking the object during a formative intervention, they also illustrate the complexity of coping with change, particularly in organisational settings. The socio-spatial dimension can

be traced by asking the question: who else should be included? For Engeström (2001b) in the Finnish health-care study, doctors see patients as part of their social network, which includes any other caregivers involved with the patient. This suggests that when exploring lecturers' adoption of a new technology in their practice, a wider network of colleagues, support staff and management may need to be considered.

The temporal dimension is traced by asking: what previous and future steps need to be considered? For Engeström (2001b) this is the trajectory of complete care given to a patient by both doctor and all other caregivers over a prolonged period of time. In this study this implies an examination of engagement with Moodle from its introduction to the time when lecturers begin using it in a pedagogically meaningful way.

The moral-ideological dimension is considered by asking: who is responsible, and who makes decisions? Puonti (2004) found that this dimension can be problematic in her study of economic-crime investigation wherein tensions arise between the police and the tax authority, both of whom are likely to have different goals. In the case of lecturers engaging with Moodle, it is possible to see potential tensions; for example, if management and academic staff have different goals for the use of a tool like Moodle.

Finally, the systematic-developmental dimension is traced by asking: how does this process shape our future activity? According to Engeström (2001b) a bottom-up initiative supported by an intervention can shape both the collective work practice and the organisation involved. Puonti (2004) agreed on the potential of a new collaborative investigation to shape future activities. I believe that in this study lecturers' participation in an intervention process also has potential to shape their future pedagogic practice with Moodle.

Activity theory researchers, for example Foot (2002), Puonti (2004) and Kaptelinin (2005), acknowledge that is it notoriously difficult to identify or "catch" the object of an activity as it is constantly moving and evolving. The

object of an activity system directs the activity and "determines the horizon of possible actions" (Engeström 1999c, p. 381). If we accept that the object is dynamic and constantly changing, the difficulty for many researchers is how to track the object through a time period. Despite the difficulties in trying to track the object of an activity, the potential outcomes of doing so enable a rich analysis of the activity system involved. One useful approach is to conduct interviews, which are useful tools for unpacking motives that represent the object of an activity (Hardman, 2005). Hardman (2005) also suggests that the tools (both material and psychological tools) used by a teacher in a classroom setting have potential for identifying the object of the system. These findings are useful in this study as they highlight the necessity to track the object of the lecturers' activity system and simultaneously unpack the lecturers' motives. However, they also have their limitations. Individual interviews are useful to a certain extent; for example, in DWR interventions they can be used to collect initial mirror data. However, the dynamics of the DWR process itself calls for a means of tracking the object in a collective group setting instead of a collection of individual interviews. In the intervention setting it is necessary to track the object in order to understand how the participant lecturers' thinking transforms over time.

According to Puonti (2004) there are two sides to the expansion of an object. Firstly, there is the self-movement of the object, i.e., how the object changes as people reconceptualise it; this generates the potential for expansion. Secondly, there is its actual construction, carried out by the people working on it. Expansion is the interactional process between the self-movement of the object and its actual construction by people working on it. Without expansive construction, the expansion remains a potential. As Puonti notes, it is the construction of the object that makes the expansion real. While Puonti's conception of expansion is very relevant to this study, Kärkkäinen's (1999) earlier analysis enriches the study of changes in the object by identifying qualitative turning points as being characterised by clusters of discursive disturbances, such as disagreements and conflicts, resulting from participants' different points of view. These "turning points" arguably occur during different phases of the object's construction.

When the object changes in "unpredictable ways" (Hardman, 2005) or has "unexpected effects" (Engeström, 1987), it can be difficult to manage the object's expansion (Puonti, 2004). Existing practices and tools may be insufficient when the object changes in unpredictable ways. For example, as Part A of this literature review suggests, existing practices may be insufficient in supporting lecturers in exploiting the potential of new technologies in their pedagogic practice. The difficulties highlighted by these authors illuminate the necessity for new tools (possibly psychological tools) and new interactions as a result of analysing changes in the object of the activity system.

2.23 The notion of collaborating communities

Activity theory recognises the fundamental role of social interaction and conversation in learning. This occurs through the notion of a collaborative community. Scholars have argued that it is helpful to consider and analyse collaboration as *object formation* (Engeström, 1987; Miettinen, 1998; Kärkkäinen, 1999; Foot, 2002). Foot (2002) suggests that it may be even more difficult to trace the object when there are multiple activity systems involved. The notion of a shared object becomes important at this point. Foot (2002) found that the object can be identified through the various points of view of multiple participants. Additionally, Miettinen (1998, p. 426) notes how the identification of an object poses great difficulties for a research group and emphasises the importance of models and representations, as well as future-oriented artefacts, in the transformation of an object. Both these authors recognise the importance of the notion of object in collaboration, as following the object can help identify those involved in the same activity.

It is important to acknowledge the influence of collaborative theories of learning when considering the idea of collaboration. Wenger et al. (2002) refer to learning communities as *communities of practice* in which people partake in developing a shared practice in order to become effective in their domain. I acknowledge that similarities exist between this notion of community of practice and the activity theory notion of community as presented by Engeström (1987), but a key

differentiating factor is that Engeström considers a historical perspective, i.e., how a community developed over time. Thus, in expansive learning, Engeström (1987) calls for a more multi-dimensional treatment of the notion of community. *Communities of practice* are usually not put into historical perspective, but they are presented predominantly as universal solutions. The historical aspect of the activity theory approach makes it an appropriate choice for this study because it allows me to investigate lecturers' engagement with Moodle against a backdrop of its historical development. CHAT suggests that without an understanding of the historically changing character of work in an organisation, theories of learning might remain too general and abstract to capture the emerging possibilities of new forms of learning (Daniels et al., 2007a).

A community creates the social fabric of learning: "community is an important element because learning is a matter of belonging as well as an intellectual process, involving the heart as well as the head" (Wenger et al., 2002, pp 28-29). Cross (2010) notes that people who identify with each other professionally naturally form spontaneous communities when given the opportunity to engage socially. From an educational perspective Niesz (2007) sees teacher networks as powerful communities that focus on contexts, identities, practices and meanings, where teachers are more honest, trusting, open and vulnerable. This view brings to mind Vygotsky's desire to forward a non-dualist account of the relationship between affect and cognition as he promoted an understanding of the intertwining of action, emotions and motive in human activity (Edwards and Daniels, 2012). Similarly, Lompscher (1999) sees motives as representing a unity of cognition and emotion, whereby objects that satisfy individuals' needs have emotional significance for those individuals. Combining all three perspectives emphasises the need to consider the affective dimension of learning alongside the cognitive. This leads us to consider the importance of how individuals conceptualise their participation in collaborative learning communities.

2.23.1Collaborating communities and emotions

Following Vygotsky's desire to understand the duality of affect and cognition, Daniels (2010b) articulated the need to understand action, emotions and motive

in human activity. As Roth (2007) observed, although emotions are pervasive dimensions of everyday work they can be invisible and only become apparent during extended participation in work activities. This implies that emotions may become more visible in collaborative activities. Within activity theory activities are oriented towards collective motives which arise in the course of cultural-historical development. Motivation and identity are effects of emotion. As Roth (2007) suggests, motivation in the workplace is high when a subject realises both individual and collective interests in the one action, and workplace motivation is indifferent or low when there is a gap between individual and collective interests. In terms of identity Roth (2007) found that an individual's identity—meaning who one is with respect to others and to oneself—is fundamentally related to collective activity and to individual and collective emotional valences which result from social interactions. These findings are pertinent in this study as they highlight the need to consider lecturers' motivations in engaging with Moodle as possibly being affected by their emotions and related to potential increases in emotional valence by the completion of one action instead of another. Arguably, emotions have a central role in activity theory as they are fundamental constituents for collaborative activity regulation (Leont'ev, 1978). However, scholars (Holodynski, 2013; Engeström and Sannino, 2010; Roth, 2009) acknowledge that not enough activity theory studies have examined the centrality of emotions in activity.

Sfard (1998) questions whether the learner is to be understood primarily as an individual or as a community, but notes how social theories reconceptualise learning as becoming a participant in, and member of, a community. This viewpoint involves the transformation of identity as a person joins, participates in and ultimately belongs to a community. Taking the Vygotskian (1978) perspective that individuals are fundamentally constituted through their interactions with the world, this means that not only do social interactions produce meanings in the world, they also produce identities. This view is supported by Lave and Wenger (1991) in their work on *communities of practice* as they suggest that gaining knowledge and skill is complementary to developing an identity in a community. Therefore, as people acquire the practices and norms

of a community through observation and gradual participation, they become part of that community and, thus, their identity is subsequently transformed.

My choice of activity theory as a theoretical framework in this study points towards a view of the learner as part of a community, as activity theory's principle of multi-voicedness encompasses this view. Thus, the focus is on a community, but it acknowledges that the community is a collection of individual voices. This is how activity theory reflects the complexities involved in gaining a rich understanding of learners and their contexts. For collaboration in the sense of participation in a community to blossom, there must be a sense that making the community more valuable is to everyone's benefit. This emphasises the importance of having a shared object. A collaborative group should provide "a place of exploration where it is safe to speak the truth and ask hard questions" (Wenger et al., 2002, p. 37). In this study the use of a DWR-based intervention, which has the potential to create a dialogical space for lecturers, aims to facilitate the participants in the collaborative construction and expansion of a shared object.

2.23.2 Collaboration and the adoption of teaching technologies

The importance of collaboration cannot be overstated when considering object construction in activity systems, as evidenced in the work of Creese, Norwich and Daniels (2000) on the usefulness of collaborative teacher groups. Although Creese et al.'s work (2000) is carried out in secondary schools, I believe it can also be applied to teaching activities in higher education. They found that the establishment of teacher support teams (hereafter, TST) to support teachers of special education was a move towards establishing a collaborative professional culture. In the same vein Wenger et al. (2002) articulated the need for a safe space for informal discussion and problem sharing, and Creese et al. (2000) found that establishing TSTs addresses this need and provides this space for teachers. Following this idea implies that, in this study, lecturers adopting a new technology potentially need a space to collaborate and to facilitate construction of the object of their activity system, which may ultimately bring about transformation.

While Creese et al. (2000) note an absence of TST-type groups in the literature on educational institutions, Davis (2005) and Mwaura (2003) found that collaboration was a key success factor in the adoption of teaching technologies among academics in higher education. This highlights the need to explore the notion of support for lecturers engaging with technology. This study addresses this issue, not least by conducting a DWR-based intervention which provides a space where participants tend to move from relatively insular or individualistic positions to that of collective change agent (Daniels, 2010a). Collaboration is particularly important in educational institutions because teaching is often found to be an isolated and isolating profession (Creese et al., 2000; Palmer, 2009a). This view is supported by Blin and Munro (2008), who crucially found that Moodle-based activities demanding collaboration or reflection were used less frequently by lecturers than those that replicate face-to-face teaching. This raises an interesting question which is significant for this study. If lecturers work in an environment where collaboration is not fostered, is it likely that these lecturers will promote collaborative efforts among their students when they employ a technology that offers the potential for collaborative activities? The Vygotskian perspective of the mutual shaping of individuals and their environments would suggest that if lecturers operate in a strongly individualistic environment, they are shaped by it and will in turn shape their own activities accordingly. Blin and Munro's (2008) findings further emphasise the need in this study to investigate if the environment in which lecturers operate impacts on how they use Moodle. This question of whether lecturers operating in an individualistic environment will, in turn, use a tool like Moodle in an individualistic fashion is examined in this study through Engeström's theory of expansive learning (Engeström and Sannino, 2010). As such, it is appropriate to facilitate a collaborative effort through an intervention in lecturers' practice and analyse its impact on their psychological functioning.

On the issue of collaboration Hargreaves (2003) cautions against "contrived collaboration" and "contrived collegiality", which, he argues, can work against professional development. Importantly, Hargreaves (2003) suggests that

contrived collaboration can occur where collaboration is enforced from above. Instead of employing hierarchical channels in this study, I focus on a bottom-up initiative by conducting a DWR-based intervention with a group of lecturers who participate voluntarily. I explore if a locally organised collaborative effort is appropriate as a way for lecturers to learn new technologies. In this study I analyse how expansive learning emerges in the form of locally organised collaboration.

2.24 The concept of boundaries

From an activity theory perspective boundaries are historically established and tension-laden. They are also potential triggers for learning and change in organisations. When Engeström and Sannino (2010) talk of multiple interacting activity systems in expansive learning they theorise the concept of boundaries, positing that practitioners must move across boundaries to seek and give help and to find tools and information wherever they are available. This concept is helpful in this study as I envisage lecturers moving across boundaries to get help with adopting Moodle, for example, from the IT Services department. In higher education institutions strong boundaries are often found between different units and functions such as between the administrative and academic functions and between academic disciplines. Schneckenberg (Schneckenberg, 2009) refers to these boundaries when he talks of the internal structural fragmentation of universities as "a higher education landscape which is inhabited by academic 'tribes' and 'territories'" (p. 419). Arguably, these organisational structures may potentially pose difficulties when a technology like Moodle is introduced Institute-wide. If we accept that knowledge sharing across professional and organisational boundaries is crucial for innovation and the spread of new ideas (Kimble et al., 2010), then the idea of boundary breaking as a locally initiated effort taking shape between historically separated worlds (Kajamaa, 2011) is important.

Boundary crossing is defined as stepping into unfamiliar domains: "It is essentially a creative endeavour which requires new conceptual resources" (Engeström et al., 1995, p. 333). Activity theorists (Strauss, 1993; Fujimura,

1992) have developed the concepts of boundary object and boundary crossing to analyse collaborative object-oriented activity by focusing on tools and the construction of boundary objects in concrete work processes. According to Carlile (2004) a boundary object enables transfer, translation and transformation of knowledge between practice communities because it acts at the interface of knowledge domains and provides a shared syntax which allows for exploration of differences. Shared artefacts can also exist as boundary objects (Engeström et al., 1995; Kerosuo, 2006), and it is helpful to view Moodle in this light as the object to engage with it is potentially shared by lecturers from various disciplines. While boundary crossing is considered complex and difficult, boundary objects are multi-voiced as they are created from a process of negotiation (Kajamaa, 2011). If we view lecturers' engagement with Moodle in this study as a boundary object, Kajamaa's observation is accurate. It takes the activity theory standpoint of shared objects across boundaries where the focus is on transformation of multiple interacting activity systems. For example, lecturers wishing to engage with Moodle are likely to look to the department that provides Moodle training and development. Two separate activity systems exist here—that of the lecturers and that of the training provider—but they are often interdependent, and they interact with each other when the interests of both overlap, i.e., when the lecturers require training in Moodle and the services department provide that training. In this conceptualisation of collaboration between departments, boundaries are crossed, albeit temporarily, in order to solve a problem.

Other studies (Engeström, 2003; Engeström et al., 2003; Engeström et al., 1999; Kerosuo, 2006) show boundary crossing where new and collaborative ways of working are developed through a process which Engeström calls negotiated knotworking. A knot is defined as "a rapidly pulsating, distributed, and partially improvised orchestration of collaborative performance between otherwise loosely connected actors and activity systems" (Engeström, 2008, p. 194). Engeström argues persuasively that in the modern workplace this type of collaboration is more prevalent than traditional teams owing to ongoing changes in work practices, which are often a result of the introduction of new

technologies. For Engeström knotworking occurs where "collaboration between the partners is of vital importance yet takes shape without rigid predetermined rules or a fixed central authority"(Engeström, 2007b). It is this lack of a central authority that also differentiates Engeström's collaborative knotworking process from Lave and Wenger's (Lave and Wenger, 1991) notion of a *community of practice*, which has a clear centre of gravity. In knotworking the centre does not hold, and this means that a new type of expertise emerges where no single actor is the permanent centre of power (Engeström, 2008). Knotworking is a process of negotiation which facilitates innovation and development, as demonstrated in the development of a care agreement as a new tool for negotiated patient care in Finnish health care (Engeström et al., 2005b). The concept of knotworking has been found useful in a range of studies in education including university-school partnerships (Fenwick, 2006), collaboration between speech therapists and school staff (Martin, 2008) and collaborative partnership between librarians and research groups (Engeström et al., 2012).

The work of Daniels et al. (2007a) on professional learning taking place in cross-school partnerships is also influential in relation to the notion of boundaries. Their study facilitates a social process of learning and transformation and distinguished between horizontal and vertical boundary crossing. The horizontal dimension occurs where learning takes place across boundaries—between departments within schools and between schools. The vertical dimension is where learning takes place between operational and strategic staff within schools. Arguably, in this study similar boundary crossing can be conceptualised: horizontally between lecturers within a department and also between different departments, and vertically between the lecturing staff and various levels of management.

Up to this point I have outlined why I chose CHAT as the principal theoretical framework to underpin this study. CHAT is a powerful psychological theory that allows for the study of human activity, cultural practices and practice-bound cognition, as evidenced in the work of Engeström (2008) and Daniels (2001; 2007b) among others. The choice of CHAT and an intervention methodology

facilitates the creation of a new context, albeit only for the duration of the study. Intervening in lecturers' pedagogic practice and facilitating a DWR-based dialogical process is a logical way of exploring lecturers' thinking in order to ascertain if their cultural context impacts on their engagement with Moodle. Having acknowledged that new forms of practice may emerge when technology is introduced to a work context, we can identify this as a cultural shift. The work of the sociologist Basil Bernstein offers an effective framework when analysing cultural shifts in institutions by providing a language of description with which to analyse the structure of the discourse artefact produced. I elaborate on my reasons for choosing to extend my activity theory analysis with Bernstein's work in the next section.

2.25 Reasons for complementing CHAT with the work of Basil Bernstein

Conducting a DWR-based intervention means the collection of a large volume of data through the participants' discourse (the cultural artefact). This discourse is taken to represent the thinking of the participants. Therefore, analysing and describing its structure should provide insights into how they make sense of their working world. Activity theory provides a way of studying learning, understood as the expansion of the objects of activity through change and development with contextual arrangements for rules, community and division of labour. This is achieved through a critical consideration of contradictions within and between activity systems (Daniels, 2006). Taking the activity theory argument that we produce artefacts with which we shape ourselves and shape the world, and applying it to the principal artefact in this study—lecturers' discourse—it is possible to analyse the way forms of talk change through the process of the DWR-based Intervention. I have shown in section 2.22 that activity theory handles changes in an activity's object over time, but the following question arises: how can I analyse changes in the discourse artefact (tool) in terms of the contexts in which it is produced? This question is important because one of the consequences of participating in the production of a discourse artefact is that it contributes to the development of consciousness. In seeking an answer to this question I turn to the work of Bernstein (1996, 2000). In activity

theory the production of the outcome of activity is addressed in a considerably advanced manner, but the production and structure of cultural artefacts, such as discourse, are not (Daniels, 2012). While Engeström (1993, 1999) utilises activity theory to describe and analyse the changing forms of cultural transmission at institutional level, he does not have a language of description (Edwards and Daniels, 2012) that permits the production of artefacts (such as talk) in an institution to be studied in a way that coheres with the principles which regulate that institution. Aspects of Bernstein's (1996, 2000) work can be used to address this absence of a language of description (Daniels, 2006).

It is acknowledged (Van der Veer, 2001) that Vygotsky gave some attention to the integration of cognitive and affective dimensions of human development at the end of his life, but a weak point in the cultural historical formation of mind thesis is its lack of focus on "how specific institutions mediate societal motives, how they stand between society and the person" (Daniels, 2010b, p. 31). It is important to consider institutional structures as cultural products. They serve as mediators of human functioning in addition to the structuring of the interactions between individuals and cultural tools (Daniels, 2010a). When people talk in institutions, history enters their communication through the implicit mediation of the institutional structures, because the way in which social relations in institutions are regulated has cognitive and affective consequences for those who live and work inside them (Daniels, 2012). A valuable contribution of Bernstein's work to this study is his attention to the affective aspects of cognition and action, as his (2000) model of discourse provides a way of theorizing discourse as a tool within activity theory that incorporates both instrumental and moral/affective dimensions. Thus, extending my activity theory analysis with Bernstein's work moves towards answering Engeström and Sannino's (2010) calls for theoretical and empirical efforts to ensure the integration of the two directions of the theory of expansive learning—up and down, inward and outward. The up and outward direction tackles learning in fields or networks of interconnected activity systems, while moving down and inward tackles issues of subjectivity, experiencing, personal sense, emotion, embodiment, identity and moral commitment.

Like Vygotsky, Bernstein stressed the importance of the social in the individual's formation of mind. According to Bourdieu (1977) and Bakhtin (1986) the discourse produced in social settings is a social product. This is an important insight, but Bernstein expanded this idea further when he referred to Bourdieu's popular notion of habitus—the cultural assumptions and mostly implicit "rules of the game" (Lawley, 1994) that are learned and internalised by individuals within that context. Bernstein (2000) asserted that "habitus is known by its output not its input" (p. 133). Bernstein identified a need to distinguish analytically between the contexts in which different forms of discourse are produced, and he understood the necessity of a language of description which would include how the discourse was produced and then recontextualised. A realisation of this language of description moves towards explaining how social settings generate specific discourses, thus extending our understanding of the production of discourse rather than simply viewing it as an output. This is important in this study.

Following Bernstein, Daniels (2004) discussed how such a language of description could be developed to extend the analysis of the production of cultural artefacts, particularly discourse, in activity theory. This is illustrated in a study of TSTs (Norwich and Daniels, 1997), which is an example of an intervention that seeks to alter the context so as to enhance collective thinking. Like Daniels, I view Bernstein's model as a way of extending and complementing an activity theory analysis in this study with a particular focus on cultural transmission in order to understand how motives are transformed in different social settings within the same institution. Conducting a DWR-based intervention has the potential to alter the context where this study is carried out, thus making such an analysis possible.

In this study, if one views the discourse embedded in lecturers' practice as both structuring, and structured by, the institutional setting, it becomes possible to examine the impact of cultural context on lecturers' engagement with Moodle. Bernstein's theory of pedagogic discourse (Bernstein, 1990, 1996, 2000) can be

used to generate concepts necessary for understanding how lecturers interpret and practice pedagogic relations in their work settings. Bernstein (1999) distinguishes between vertical and horizontal discourse. Horizontal discourse is that which is found in everyday activity. Usually oral, informal, spontaneous and context dependent; it is tacit, multilayered and contradictory across, but not within, contexts. Vertical discourse is coherent, explicit and often contrived; it is hierarchically and systematically organised. It often takes the form of specialised criteria for the production and circulation of texts. For Bernstein a language of description could relate these forms and potentially serve to generate possibilities for difference. Bernstein's language of description is derived from an analysis of power, which creates and maintains boundaries in organisations, and control, which regulates communication within specific forms of interaction (Daniels, 2006). To examine relations of power and control, Bernstein uses the concepts of classification and framing, which are discussed in the next section.

2.26 **Principles of classification and framing**

Classification and framing are theoretical concepts which attempt to specify the nature of the rules that transmitters and acquirers must learn in order to produce what is considered legitimate meanings in the relevant contexts (Bernstein, 1990). Initially, Bernstein focuses on two levels: a structural level and an interactional level. Firstly, the structural level is analysed in terms of the social division of labour it creates. This is termed *classification*. The interactional level is analysed in terms of the social relations it creates. This is termed *framing.* He grounds this concept in the material division of labour, thus allowing for a move between the analysis and description of the social order and that of the practices of communication. The social division of labour is analysed in terms of the strength of the boundary or insulation of its divisions. For example, the strength of boundaries between schools in a higher education institution or between a manager and his subordinates' work mode. At a macro level the categories or insulations represent examples of power. At the micro level classification is about the organisational or structural aspects of a pedagogic practice. Structures—for example, categories of agents, discourses and institutional contexts—are distinguished in terms of their boundary

arrangements and their power supports and legitimations (Bernstein, 1996). Secondly, the interactional level is generally interpreted as the regulation of the transmission and acquisition in social relations between teacher and student, but, theoretically, the analysis can be extended to include social relations in contexts of industry or commerce (Daniels, 2008a). In the investigations reported in this study, the social relations included are those of the participant lecturers in their work context.

Fundamentally, framing refers to the ways in which principles of control are conveyed through particular regulations of social relationships (a vertical division of labour) and discursive practices as they attempt to establish and distribute power. Framing specifically refers to the difference between what may and may not be transmitted in the pedagogic relationship. In this way framing regulates relations between transmitters and acquirers within a context. It gives us a way of describing who has control over the (i) selection, (ii) sequencing, (iii) pacing and (iv) evaluation of a particular pedagogic discourse. It is possible to draw on the concept of framing to illuminate the power relations behind communication in pedagogic relationships. The framing values can be strong or weak and vary with respect to the elements of the practice. Therefore, one could have weak framing over pacing, but strong framing over other aspects of the discourse (Bernstein, 1996). The analysis of framing strength in an educational organisation can help to highlight the power particular agencies have over *what, when* and *how* that transmission of information evolves.

Bernstein (2000) also talks of external framing, which, he says, is the control exerted over communication with those who are involved in the activity but are not located within the institution. Daniels (2006) suggests that Bernstein's external framing illustrates a parallel with Engeström's notion of community. What is significant is that Bernstein enables us to move beyond the questions of being members of the community who are involved in dialogues and actions to questions of control relations with that community (Daniels, 2006). Bernstein's classification and framing model is useful when investigating the impact of context on lecturers' thinking in relation to Moodle. For example, the discourse

produced by lecturers in a particular context can be analysed using these concepts to gain an insight into the relations between the structure of the setting and the lecturers' micro interactions. A variety of pedagogic structures can be generated according to the principles of classification and framing (Bernstein, 1996). This study provides examples of contexts in a higher education institute that potentially differ in their strength of classification and framing. The use of Bernstein's framework to extend activity theory in this study permits the move between organisational structure and the structure of the discourse produced during the study. The notion of external framing orients us to think about how lecturers' engagement with Moodle may be influenced by the wider context outside their own specific work context. This aligns with the aim of the study to understand the impact of cultural context on lecturers' engagement with Moodle. In order to apply Bernstein's language of description to discourse recorded from lecturers, it is necessary to create a model of description. This is discussed in the next section.

2.27 **A model of description**

Bernstein (2000) models an approach to analysing differently bounded contexts in which different discourses are produced in an institute similar to that considered in this study. With a language describing different institutional modalities, Bernstein (1996) devised a notation or code which can be used to denote the strength of a category's boundary or insulation. This code is rooted in probability rather than absolutes in that it points to the most likely categorisation. Where there are very strong boundaries between categories, each is distinguished by having its own specialisation, termed very strong classification and notated as C++. Bernstein (1996) used the values + or – to denote the strength of the classification. C-- would, therefore, denote very weak boundaries between categories. If we think of a higher education institute where departments are highly differentiated (e.g. mechanical engineering, electrical engineering, civil engineering) and an institution where there is little differentiation (e.g. one general engineering department), classification could be identified as stronger in the former, denoting strong boundaries between categories. Classification, strong or weak, marks the distinguishing features of a

context (Bernstein, 1996). This notation was adopted by Daniels (2010c) in his study of multi-agency functioning within local authorities. I also considered it appropriate in this study as a way of classifying different contexts. Bernstein (1996) uses a similar notion to denote the value of framing. For example, F++ denotes a very strong framing, whereas F- - denotes a very weakly framed pedagogic relationship. Where framing is very strong it is the transmitter who controls what may and may not be communicated. Conversely, where framing is weak, the boundary is "blurred". In weakly framed pedagogic practice the acquirer is accorded more control over the regulation.

Bernstein (2000) power relations are realised in the principle of classification. Classification is the key to distinguishing contexts as it orients the speaker to what is expected and what is legitimate in a given context. It provides the recognition rules for *what* is required. The possession of recognition rules allows the acquirer to recognise the difference between categories. For example, the rules that allow a professional to be recognised as belonging to a particular group can be seen in the different forms of discourse of lecturers within the different schools with rigid subject boundaries of a higher education institute. Daniels (2010c) points out that it is not just about recognising the group to which someone belongs, but it also refers to the ways in which talk patterns and other actions can be seen as belonging to a particular professional grouping or category. It is through the analysis of these talk patterns produced in different contexts that Bernstein's model is useful in understanding how a particular context can shape lecturers' thinking and pedagogic practice. Recognition and realisation rules constitute the ground rules needed for lecturers to meaningfully recontextualise or to demonstrate successful orientation in a given context.

Bernstein's (2000) model is designed to relate macro-institutional forms to micro-interactional levels and the underlying rules of communicative competence. This allows researchers to take measures of institutional modality. It is thus considered appropriate in this study as a measure of understanding the modalities that are found in different contexts (for example, the context where the participants work every day and the Intervention context) within the

institution where the study was conducted. According to Bernstein (2000), in order to understand pedagogic discourse as a social and historical artefact, it is necessary to look at how its structure is regulated, the social relations of its production and the different modes by which it is recontextualised as a practice. We can look at lecturers as meaningful recontextualisers of the official pedagogic discourse in their contexts.

While third generation activity theory puts the focus on networks of activity with their tensions and contradictions in defining motives and objects of activity, it is Bernstein's work that offers the analysis of power and control within and between developing activity systems. This strengthens my choice of Bernstein's work as a suitable way of extending an activity theory analysis. Daniels (2010b) suggested that changing the social situation of action can bring about change in motive, which in turn transforms the meaning of actions that may initially seem identical. In agreement with this I believe that when investigating the contradictions and struggles which occur in the definition of motives and object of activity, as in this study, an analysis of power and control between activity systems is necessary to understand any transformation in the thinking of the study's participants. After all, an understanding of relations of power and control in an activity system should illuminate the structure of the context in which the activity takes place.

2.28 **The concept of recontextualisation**

Bernstein (1996) suggests that pedagogic discourse is recontextualised in that it relocates and reconstitutes other discourses in order to establish its own order. This concept of recontextualisation is relevant in this study as it offers interesting insights. Lecturers use a discourse that is produced in their daily work environment; it is shaped by the culture of both that context and the wider institution. Conducting a DWR-based intervention creates an intervention context where the lecturers enter a field of recontextualisation, in that they reorder and refocus their discourse, i.e., recontextualise it through their micro interactions. Later, they may reproduce it when they revert to their everyday work environment outside the Intervention context. This is worth noting, as the

management of the school and non-participant lecturers will not be familiar with the discourse of the Intervention context. This brings two discourses into a special relationship with each other: the original discourse produced in the school context and that recontextualised in the Intervention. Examining the recontextualised discourse may highlight any transformations that occur in how the lecturers engage with Moodle as a result of participation in the Intervention context.

Bernstein (1996) offers the recontextualising of university physics as school physics as an example. New knowledge of physics is produced in universities or research institutes (the field of production). This knowledge is later interpreted and converted to pedagogic knowledge (field of recontextualisation), as appropriate for use in a different institutional context, for example, schools (the field of reproduction). These three fields of production, recontextualisation and reproduction are strongly insulated from one another. This strong insulation constitutes specialist identities of agents and discourses within each field and weak identification between fields. Each of these fields has different social structures which give rise to different modalities of language that have specialised meditational properties. Daniels (2010a, p. 108) explains the formation of these social structures when he asserts:

> They have arisen, have been shaped by, the social, cultural and historical circumstances in which interpersonal exchanges arise and they in turn shape the thoughts and feelings, the identities and aspirations for action of those engaged in interpersonal exchange in those contexts.

Similarly, Hasan (2002), drawing from Bernstein (1990), also believed that discourse is not just a regulator of cognitive functions but is central to the shaping of our dispositions, identities and practices. In arguing for the importance of discourse, Hasan (2002) pointed to Bernstein's (1990) attention to invisible semiotic mediation, i.e., how our unselfconscious, everyday discourse mediates our mental disposition and our tendencies to respond to situations in ways creating our beliefs about the world in which we live, including both cultural and natural phenomena. Thinking about lecturers' engagement with

Moodle from this perspective further encourages an examination of lecturers' discourse in order to understand their beliefs about their everyday context.

For Bernstein pedagogic communication cannot be studied adequately without examining the medium that carries it—the pedagogic device, that which provides an analytic description for this process of recontextualisation. In his modelling of pedagogic discourse as a principle of recontextualisation, he explains that it is a rule for the embedding of two discourses (Bernstein, 1996). For Bernstein (1996) the pedagogic device is made up of (i) an instructional discourse, which is a discourse of content, skills and their interrelations; and (ii) a regulative discourse, which is a discourse of social order, relation and identity. In pedagogic discourse, the regulative discourse is the dominant discourse because it captured something about society's moral order (Bernstein, 1996). It communicates an institution's public moral practice, values, belief and attitudes, as well as features of the institution's local history, traditions and community relations (Daniels, 2008b). These two discourses (instructional and regulative) always coexist, but for analytic purposes it is possible to handle them separately (Bernstein, 2000).

2.29 **Positioning the subject**

Bernstein makes a link between social positioning and human psychological functioning. He states that "social, cultural, political and economic relations are intrinsic to pedagogic discourse" (1990, p. 14). There is a dialectical relationship between discourse and subject. Discourse is theorised both as something that shapes cognitive functioning and also influences dispositions, identities and practices (1990). The position of individuals with respect to one another within an activity impacts on their engagement with tools and objects (Daniels, 2008b). Additionally, Holland et al. (1998) assert that identity is something that is constantly forming and is comprised of contradictory self-understandings and identities spread across the material and social environment. In other words, our identities are historically developed, emerging as a result of our social positions, as defined by the social organisation of the activities in which we participate. For Holland et al. (1998) social position becomes mental disposition. They also suggest that multiple identities are developed when subjects take up different

positions, as defined by social organisations, over time. Although there are parallels here between the notion of subject position put forward by Holland et al. (1998) and Engeström's (1987) notion of division of labour, which creates different positions for the participants who bring with them their own histories in taking up those positions within activities, Daniels (2008b) identifies the need to develop further the notion of subject in activity theory. He claims that the formative processes that give rise to a subject's perspective need more attention.

Arguably, Bernstein's concepts of "message" and "voice" are useful in addressing this issue, both empirically and analytically. Bernstein (1996) formulates these concepts on relations of power and control through classification and framing, as discussed earlier in section 2.26. For Bernstein (1990) a bounded category establishes the "voice" and sets a limit on what is legitimate within a particular category. We can say that the "voice" constitutes the space of possibility. These spaces are reinforced through power relations. The "message", on the other hand, is an individual's practice or the position that one takes up within a category. The positions are reinforced through control relations: the stronger the control, the less possibilities for positions. For example, within a higher education institute there are allowable ways (positions) for being a lecturer (the "voice"), but the actual position that any one lecturer takes up, the contextual realisation of the allowable positions, is the "message". Therefore, social identity is constructed by the "voice"/ "message" relationship.

This perspective has implications for this study when analysing discourse produced in different contexts. In activity theory terms the subject is represented as a single point, but, as Daniels (2008b) argues, in the same way as there are many positions for the object, so too are there many positions for the subject. One can see how the division of labour sets up these possibilities as different people take up different roles. In this study an intervention process which has the potential to change the division of labour allows for the observation and analysis of shifts in the subject positions of the participants, thus giving deeper insights into the impact of their cultural context. This analysis

is only made possible by using Bernstein's work as an extension of an activity theory analysis.

From an activity theory perspective learning is explained as a self-regulated, meaning-making process in which individuals or groups of individuals choose to participate based on their goals and motives (Yamagata-Lynch, 2003). It appears that while theories of learning have tried to explain enduring changes in human behaviour and cognition, the issue of how people change themselves as they change their circumstances has not been addressed (Yamazumi, 2008). Expansive learning, which I draw on in this study, is one approach that attempts to address this issue of subject agency—participants' ability and will to change their activity systems as they change their own behaviour. It does this through formative interventions that attempt to mobilise the intellects and energies of all the participants from the ground up (Engeström and Sannino, 2010). While studies (Sannino, 2009; Virkunnen, 2006) have examined agency, it is acknowledged that further work should open up the possibilities to theorise agency as something that can be purposefully cultivated (Engeström and Sannino, 2010).

The notion of relational agency was developed by Edwards (2005). It is a useful concept in addition to that of subject agency in that it theorises agency from a collective perspective. In relational agency both the interpretations and responses of those attempting to solve a problem are considered (Edwards, 2005). If people develop a shared understanding of the motives, i.e., what matters for others involved in an activity where problems arise, then they can align their responses, and this allows the exercise of relational agency to begin. For Edwards (2009) relational agency enriches the notion of subject agency by considering how individuals become more effective when working with others. This she notes, using Knorr Cetina's (1999) term "confidence pathways", as professional development for the individual.

2.30 **Chapter summary**

This chapter argues that a more expansive and critical approach to understanding the use of ICTs, particularly the VLE, in higher education is required to accommodate the complexity of this socially situated and culturally-mediated phenomenon. For too long scholars studying the appropriation of TEL in higher education have fixed their gaze on the technology itself instead of the lecturers and the nature of the socio-cultural contexts they inhabit. Owing to the absence of the predicted transformative effect of TEL on higher education, there is an emerging need to look elsewhere for explanations of this issue. A sense of uncertainty and unfulfilled potential surrounds the integration of TEL in higher education. It is time to broaden the focus of investigations and take an alternative perspective on TEL. One way of doing this is to adopt a socio-cultural approach, namely Engeström's CHAT framework, in order to understand the complexities surrounding lecturers' use of TEL in higher education. As a conceptual tool activity theory gives a rich and expansive way of studying humans in their natural environment. It enables the expansion of the unit of analysis from individual actions and mental states to encompass a range of social, cultural and historical factors which can more accurately represent complex human activity (Engeström, 1987; Kaptelinin et al., 1999). This expansive lens of activity theory provides a means of understanding how human action shapes, and is shaped by, the contexts in which it takes place.

Activity theory calls for the collection of the discourse artefact, but it does not provide a means of analysing the structure of the discourse in relation to the context of its production. Basil Bernstein's work, on the other hand, provides such a means of analysing discourse by making visible some contextual constraints that shape interactions. This complementary use of theoretical frameworks allows for the creation of a conceptual link between the institutional settings and the discursive practices within them and provides a means of understanding how lecturers in higher education make sense of ICTs in their culturally mediated work environment.

Taking into account the work to date on engagement with TEL in higher education, I chose to conduct a formative intervention in the lecturers' everyday pedagogic practice because this enables participants to work out the inner contradictions of their activity through a process of analysing and modelling a new solution, if necessary. In the next chapter, the formative intervention methodology chosen for this study is described and justified. In addition, theoretical and practical issues are considered in relation to the data collection and analysis processes employed in this enquiry.

3 Chapter three: Methodology

3.1 Introduction

The purpose of this chapter is to outline the methodological dimensions of my study. The study is guided by one broad question: What is the relationship between cultural context and lecturers' engagement with the VLE Moodle? Methodology explains the research strategy that translates ontological and epistemological principles into guidelines that show how research is conducted. My approach is to take a constructivist ontology, coupled with a combined interpretivist and critical realist epistemology as the underlying paradigm for a formative intervention which enables the collection and analysis of data. This is, therefore, a qualitative enquiry which aims to understand how lecturers make sense of the use of Moodle in their teaching context.

This chapter is divided into two main sections. The first section discusses the philosophical assumptions underlying the study, and the second section presents the research strategy and discusses the design, sample, data collection, analysis, ethics, validity and reliability of the study. Through the use of a DWR-based intervention methodology, I identify key factors which affect and shape the participants' experiences with Moodle.

3.2 Methodological considerations

Methods of enquiry are value-laden, and, as such, they are based on assumptions, which include: assumptions about the nature of the reality being studied and what constitutes knowledge of that reality (i.e., ontology); assumptions about the relationship between the researcher and the reality being researched (i.e., epistemology); and, finally, assumptions about the appropriate ways of building knowledge of that reality (i.e., methodology). Our world-view strongly impacts on our method of enquiry (Cohen et al., 2007). Cohen et al. (2007) also suggest that our ontological assumptions determine epistemological assumptions, which

in turn give rise to our methodological choices, and these in turn influence instrumentation and data collection.

This study is based on "real world" research in that the participant lecturers are studied in their natural work environment using an interventionist methodology. Interestingly, Robson (2011, p. 4) notes that:

> much real world research focuses on problems and issues of direct relevance to people's lives, to help find ways of dealing with the problem or of better understanding the issue.

This type of research goes beyond the technical exercise of gathering data; it is intended to give an understanding of the "real world" that it investigates.

The choice of methodogology has implications for factors including researcher investment, researcher role and participant input. What is learned about the subject of the research enquiry is equally important. For these reasons methodological choice is fundamentally important as it is the way in which the various choices work together. Following Cohen et al. (2011), who emphasise that our research should be informed by how we view our world, I explain the ontological stance and epistemological orientation which underpin the methodological choices I made in this study in the following sections.

3.3 **Ontological stance**

Ontology is concerned with the nature of reality; it is the nature of the social phenomena under investigation. It is the question of what constitutes reality and how can we understand what kind of entities exist. Ontological questions arise, such as: is there a "real" world "out there" that exists external to the individual? Or, is the world socially and discursively constructed, and thus a product of individual consciousness which is dependent on a particular time and culture (Cohen et al., 2011)? In this study I am guided by the constructivist assumption that reality is not absolute; instead, multiple socially constructed realities exist that are time and context dependent (Mertens, 2010; Healy and Perry, 2000) whereby the information and knowledge that the participants possess comes

from their own experiences (Bryman, 2008). I draw on Cultural Historical Activity Theory (CHAT) (Engeström, 2000a; Nardi, 1996), which has gained recognition as a framework for analysing human activity. CHAT, as a conceptual framework, orients the study towards a social constructivist theoretical perspective (Vygotsky, 1978; Lave and Wenger, 1991). This perspective involves particular ontological beliefs about the nature of reality and knowledge. For example, it holds the view that knowledge is contructed through the social interactions of humans engaging in an activity and that people construct their own understanding of reality. This aligns with my research goal, which is to understand the complex world of lived experiences from the point of view of those who live them. In the next section I further discuss the constructivist paradigm to which I subscribe in this study.

3.4 **Constructivist paradigm**

Constructivists take the view that an organisation is shaped by the individuals who inhabit it. Social products are the categories people use to understand the natural and social world, and these are constructed in and through social interaction (Bryman, 2008). Constructivism emphasises micro-interactions as the source from which to gain information about the creation of social life. The task for me as a constructivist researcher is to interpret and understand the different constructions of meaning and knowledge from people's experiences. The constructivist researcher presents a particular version of reality, and not one that can be taken as fixed or definite (Bryman, 2008). For this reason constructivist researchers tend to use observations and interviews in their investigations to obtain a variety of perspectives. They conduct their studies in the "field" where the participants live and work in order to gain an understanding of what lies behind the participants' words (Easterby-Smith et al., 2002). My study considers the impact of cultural context on lecturers' engagement with Moodle. It is conducted in the context of the Business School in ITWI in relation to people's beliefs and experiences and, in the Vygotskian sense, the mutual shaping of tool-use. Constructivism is therefore appropriate as a paradigm that views learning as a socially mediated process.

Even though my study is principally influenced by the assumptions of the constructivist paradigm, I also note Taber (2007), who suggests the increasing importance of the blurring, interbreeding and complementarity of various research paradigms. Consequently, I also draw on elements of critical realism. While I acknowledge that disputes are ongoing between advocates of the different paradigms, I believe that the social researcher is responsible for deciding which stance best fits his or her own mental models and research questions in order to conduct comprehensive and valuable social research (Greene, 2007). The ongoing debates between advocates of different paradigms are viewed as a sign of "a healthy vitality within the social science community" (Greene, 2007, p. 19). The elements of the critical realist approach to which I subscribe are discussed in the next section.

3.5 **Critical realism**

Realism is the belief that reality exists independently of the human mind, with the ultimate reality being the world of physical objects. Realism, as a philosophical paradigm, incorporates elements of constructivism (Greene, 2007). For realists, knowledge is a social and historical product produced at a particular time in a specific culture or situation. Critical realists argue that social worlds depend on human action for their existence. This view also accords with the CHAT conceptual framework which focuses on how human activity is developed through social interactions across time.

Critical realism originated in the writings of Roy Bhasker during the 1970s. It seeks to understand the deep underlying mechanisms which are understood to generate empirical phenomena. Critical realism is "critical" because its practitioners try to identify structures in order to change them (Bryman, 2008; Alvesson and Sköldberg, 2009). The status quo may be altered by the introduction of changes to these structures. I believe that the critical realist approach brings a valuable perspective to my study. For example, employing a CHAT conceptual framework naturally orients me towards an interventionist approach, which by its nature stimulates change. At the core of the CHAT-based

interventionist approach is the intention to reframe an understanding of the practice under study, to develop new work practices and to generate change.

Critical realists accept that the structures identified may not be amenable to the senses. The emphasis on understanding the meaning of experience and behaviour in context is crucial in the realist approach to social research. My focus on trying to understand lecturers' engagement with Moodle necessitates an understanding of the sense and meaning that the lecturers make of their work environment. Using the critical realist assumption that introducing change to the lecturers' work environment is a means of understanding it is both a complementary and fruitful perspective to the constructive paradigm which I principally adopt in this study. I will now turn to discuss my epistemological orientation.

3.6 **Epistemological orientation**

Epistemology is also referred to as the theory of knowledge. Its central concern is the relationship between the enquirer and the reality being researched. Epistemological assumptions are concerned with how we come to know what we know; that is, the very basis of knowledge, its nature and forms, and how we acquire it and communicate it to others (Robson, 2011). In the human and social sciences, epistemological questions concern the nature of the "truth". How can someone engage in cognitive activity and arrive at a true belief, avoiding a false belief? Epistemologically, adherence to the principles of the constructivist paradigm is evident in my study in that CHAT, the guiding theoretical framework, is rooted in contexts and persons other than the researcher. CHAT emerged for me from a review of conceptual and empirical practice-based literature (Engeström, 1987, 2001).

Epistemologically, CHAT holds that social interaction is essential for the develoment of cognition and knowledge (Vygotsky, 1978). While this study is guided by the CHAT framework, it is important to articulate the contribution of the Vygotskian account of the social formation of mind—in which CHAT has its genesis—to the theoretical underpinning of this study. Throughout Vygotsky's

(1978) formulation of a socio-cultural approach to cognition is the claim that higher mental functioning and human action are mediated by both tools ("technical tools") and signs ("psychological tools"). Activity theory draws on the Vygotskyian theory of cognition, wherein higher mental functioning appears on two planes: firstly on the social plane, between people as an interpsychological category, and secondly on the psychological plane as an intrapsychological category (Kanuha, 2000, p. 443). For Vygotsky the formation of the human mind is a social and cultural phenomenon (Fox et al., 2007). A higher education institution, such as ITWI, is a social construction in which one finds specific forms of social interaction and social setting which influence psychological processes. I aim to examine the relationship between a specific social setting and engagement with the technological tool Moodle.

I chose to employ CHAT and to complement it with the work of the sociologist Basil Bernstein (1996, 2000). While both activity theory, as developed by Engeström, and Bernstein's sociology engage with a common theme—namely the social shaping of consciousness—they come from different perspectives. This ensures that data uncovered in the field are considered in a broader light at the analysis stage of this study than if just one theoretical perspective is used. Using both of these theories in a complementary fashion provides a richer view of the impact of cultural context on lecturers' engagement with Moodle than either could offer in isolation. This means that by using activity theory, just as the actions and perceptions of the participant lecturers are given attention, so too are the social and historical contexts which the lecturers inhabit. Additionally, the use of Bernstein's work offers the possibility of analysing the structure of the discourse produced by the participants as a cultural artefact. Employing CHAT as the guiding theoretical framework means that I draw on a constructivist ontology and an interpretivist epistemology. I discuss the interpretivist perspective in the next section.

3.7 An interpretivist perspective

Interpretivists subscribe to constructivism in that they believe that reality is constructed by social interaction and is culturally derived and historically

situated. The interpretivist–constructivist perspective views individuals as constructing reality through a combination of their backgrounds, assumptions and experiences. The central tenet of the interpretivist paradigm is to understand the subjective world of human experience (Cohen et al., 2011). Because of the subjectivity of the human experience, social reality can have multiple perspectives.

CHAT accounts for this subjectivity with its concept of multi-voicedness, taking into account individuals' multiple points of view, traditions and interests. Cohen et al. (2011, p. 17) argue that for interpretivists "to retain the integrity of the phenomena being investigated, efforts are made to get inside the person and to understand from within". Much of the work on the interpretivist perspective can be traced to the late-nineteenth-century scholars Dilthey (1833–1911) and Weber (1864–1920). They held that the human sciences are fundamentally different from the natural sciences and, as such, cannot be studied in the same way (Erickson, 1986). Interpertivists do not believe that reality is "out there"; rather, it is in the minds of individuals. Interpretive theorists believe that the social actors, by assigning meaning systems to events, create reality and the social world (Sarantakos, 2005). Interpretivism is predicated on the view that a strategy is required which respects the differences between people and objects in the natural sciences (Bryman, 2008). Thus, a study such as this, i.e., of the everyday social world of lecturers and their engagement with Moodle, requires a logic that reflects the distinctiveness of humans within the natural order.

As an interpretivist researcher I attempt to understand how the participant lecturers make sense of Moodle in their work environment; their subjective experience is at the centre of the enquiry. According to Cohen et al. (2011) interpretivist approaches to research focus on action, but this is only meaningful to researchers if we can ascertain people's intentions, so as to share their experiences. CHAT helps me to understand participants' intentions in that it focuses on actions and motives as constituent parts of human activity in a particular context. With its concept of object-oriented and culture-mediated

human activity as the unit of analysis, CHAT provides an appropriate interpretive framework for this study.

For Greene (2007) truth is attained when theoretical predictions are supported by empirical data. Wahyuni (2012) notes that interpretivist researchers can take an emic, or insider, perspective which allows for the study of social reality from the perspective of the individuals themselves. In my case as an insider-researcher, while I make a conscious effort to remain objective at all times during this study, I acknowledge that my interpretations flow from my own personal, cultural and historical experiences. My study enquires into a social situation, namely how the cultural context impacts on lecturers' thinking in relation to their engagement with the VLE Moodle. It is a study which aims to understand the world of human experience and its impact on cognitive functioning, and, as such, it aligns with an interpretive perspective. In the next section I discuss how choosing CHAT as the guiding theoretical framework informed my decision to conduct a DWR-based intervention.

3.8 CHAT-informed DWR-based methodology

In chapter two I discussed the usefulness of activity theory in enabling me to engage with the problem under investigation. I argued the case for using activity theory as the guiding theoretical framework for my study based on a review of the conceptual and empirical literature. My primary interest relates to how participant lecturers engage with Moodle in their practice and if their social setting impacts upon this. In the Vygotskian sense this provides the potential for understanding how humans mediate their world through the use of tools. Activity theory regards intervention as an essential part of studying human practices (Miettinen, 2006) and, therefore, orients me towards an intervention methodology.

For Engeström (1987) CHAT is a practical intervention methodology that is concerned with expanding the horizons for action and learning in organisations such as schools or workplaces. CHAT-based research is seen to excel in interpretive, small-scale and teacher-oriented studies of educational change

(Yew-Jin, 2011). Activity theory provides a framework which allows one to engage with the complexity of studying human activity in context. This was precisely what I set out to do: to study lecturers' activities in their everyday context and to ascertain if this context impacted on their engagement with Moodle. Other studies also influenced my decision to take an interventionist approach (Engeström, 2008; Daniels, 2001; Daniels et al., 2007a) as they show how activity theory is a powerful social theory through which to study groups of people and systems in context.

Engeström's work on activity theory also encourages us to draw on its Vygotskian roots by employing double stimulation as a methodological tool to facilitate problem-solving in an interventionist context. Engeström is interested in processes of social transformation and includes the structure of the social world in his analysis, while also considering the conflictual nature of social practice. This emphasis resonated with my choice to explore the lecturers' social context and to determine if it impacted on how they engaged with Moodle in their work environment. Inspired by the work of Engeström and his colleagues at the Center for Activity Theory and Developmental Work Research, Helsinki, I draw on the Developmental Work Research (DWR) approach for guidance on conducting a CHAT-inspired intervention.

DWR is a set of methods which have been developed by a research team led by Yrjö Engeström at the University of Helsinki since the 1980s. DWR is an interventionist method which has been employed as a test bench for Engeström's theoretical ideas on CHAT. Its purpose is the collective transformation and development of work practices. DWR and expansive learning are concerned with solving actual problems in local, real-life work communities in a series of intervention sessions, known as the Change Laboratory. This facilitates collaborative efforts between practitioners and researchers which aim to develop work activities and understand their transformation.

Engeström (2000b), following Rogers (1997), argues that workplace research needs to facilitate change, which means that the researcher must refrain from

taking a back seat and instead take an active role in becoming a change agent. This means that development is at the core of any intervention. Influenced by Engeström and Rogers, I looked at an intervention as a way of enquiring into the social situation of interest in this study in order to understand how cultural context impacts on lecturers' thinking in relation to their engagement with Moodle. I believed that by intervening in lecturers' practice in the context of interest, I could investigate and understand this phenomenon. As a full-time lecturer in the setting under study, I wanted to add value through this study and facilitate change in a way that might improve the working lives of the participants. This view is supported by Mercer (2007, p. 7), who notes that "involving practitioners in research is one way of facilitating change". I see an intervention as a means of achieving this type of participant involvement. In my study the methodological choice of a formative intervention enabled an exploration of the relationship between transformations in the social structure and their association with the acquisition of a new artefact or tool in a particular context.

Guided by CHAT and DWR's two foundational principles—double stimulation and ascension from the abstract to the concrete—I aimed to conduct an intervention in lecturers' professional practice in order to understand if the cultural context impacted on their engagement with Moodle. These are not abstract principles; rather, they must be connected to the target of the intervention (Engeström et al., 2014). The principles proved to be appropriate for my study. For example, the principle of double stimulation employed in an intervention context enabled me to understand the lecturers' engagement with Moodle from their own perspectives. It provides a mechanism with which people can intentionally break out of a conflicting situation, change their situation or solve difficult problems (Sannino, 2011). Using a DWR-based intervention was an appropriate methodology to observe and record the participants working out the complexity of their own situation with Moodle in their pedagogic practice.

The second principle, namely ascension from the abstract to the concrete, is a dialectical movement of thinking. In an intervention it provides a way of grasping

the object of a human activity and theoretically tracing the logic of its historical formation and development through the emergence and resolution of its inner contradictions. Employing this principle in this study enabled me to understand how lecturers think about and develop the use of Moodle in their pedagogic practice. Broadly speaking the focus of this study is on understanding the relationship between cultural contexts and cultural products. More specifically it focuses on the transformation of lecturers' thinking as they participate in different cultural contexts as a means of understanding the impact of context on human functioning. The lecturers' discursive practices are seen as a cultural product which shapes, and is shaped by, their thinking. During this study I examined patterns of lecturers' talk (discourse) as they moved from one context to another.

As stated already, I was guided by the CHAT framework in choosing a formative intervention as the method to conduct this examination. A DWR-based intervention enabled me to facilitate the process which resulted in the creation of a new context. This active creation of context in practice or activity became the primary focus of analysis. As the participant lecturers actively created a new context, it was possible for me to observe and therefore analyse the process. Nardi (1996) remarks how an activity theory perspective embeds consciousness in a human activity system and thus enables a description of how changes in consciousness are directly related to someone's material and social circumstances. By observing and recording the material and social conditions present during this study, it is possible to report on the transformation in lecturers' thinking as it emerges. This accords with Engeström et al's (2014) assertion, as noted in chapter two, that when the methodological principles of double stimulation and ascension from the abstract to the concrete are employed in DWR interventions, transformative agency emerges as a third principle. The context or social setting in which the study takes place is important; as Suchman (1987) reminds us, actions are impossible to understand without their context. The choice of an intervention methodology based on DWR facilitated the introduction of experimental changes that represent a restructuring of established institutional forms and values.

To explore the relationship between cultural context and lecturers' engagement with Moodle, I intervened in the lecturers' practice to track the transformation in their thinking as they worked collectively with Moodle which, as a new tool, mediated their practice. The DWR intervention methodology, as espoused by Engeström, facilitated the process which I deemed most suitable for my study. I conducted an activity-theory–inspired intervention where the lecturers engaged in collaborative activities of dialogue and debate, which permitted analysis of the transformation in their thinking. While I could have used observations of the lecturers' practice as the primary method of data collection, this would have resulted in a more descriptive analysis. I chose to intervene in the practice because I was motivated as an insider researcher not only to understand the challenges arising from the introduction of Moodle but also to offer a potential tool to change the existing activity, if the participant lecturers so desired. Before finally deciding to conduct a DWR-based intervention, I began my empirical work by conducting an exploratory study. I explain how this progressed in the next section.

3.9 Evolution of the study – an exploratory study

The exploratory study was carried out at ITWI between April and June 2009. Its aim was to get a sense of lecturers' and students' experiences of Moodle in their teaching and learning environment. I wanted to collect data from the naturalistic setting of ITWI because I envisaged that this would provide information on what people thought about Moodle, at least in a broad sense. This information would in turn provide valuable material for the design and direction of the main study. I wanted to gain ideas as to how I could best conduct a detailed investigation of the impact of cultural context on the acquisition of skills in the use of Moodle.

The nature of this study aligns with what Lincoln and Guba (1985) call emergent design; they argue that this is a characteristic of studies conducted in naturalistic settings. The design of the study emerges or unfolds as it progresses. "What emerges as a function of interaction between the inquirer and phenomenon is largely unpredictable in advance" (Lincoln and Guba, 1985, p. 41). In DWR formative interventions, it is also suggested that instead of creating grand

designs for research work we should cultivate tentative solutions through experimentation, first locally and then later generalising through further experimentation (Engeström et al., 2014).

I began the exploratory study with the intention of determining the efficacy of my broad research question. This was a way of informing a methodological choice that would generate data which would in turn help to answer my research question. The exploratory study was also a method of investigating—at a very general level—lecturers' experience of, and engagement with, Moodle in their teaching practice. I needed to gain an insight into the use of Moodle in order to refine my research question and subsequently design the main study. Previous observations from my role as a full-time lecturer in the Business School led me to believe that lecturers were reluctant to engage with the new technological tool (Moodle) in their teaching environment. Casual conversations with colleagues alerted me to the fact that many lecturers did not use Moodle, yet they were uneasy about this lack of engagement. It seemed that the small number of lecturers who did use the tool did so only at an elementary level. I strongly sensed both anxiety and ignorance from my colleauges in relation to the tool. From these early observations I formulated preliminary research questions to focus my thinking and begin the exploratory study:

- What are the lecturers' views on the use of Moodle in their teaching environment?
- Why are lecturers using/not using Moodle in their teaching environment?
- Do lecturers wish to engage with Moodle in their teaching environment in the future?

In order to answer these questions, I needed to collect some qualitative data to gather lecturers' views on their use of Moodle. I decided to begin by conducting interviews with a small number of lecturers and students from across ITWI. This enabled me to gain a rich understanding and a broad perspective on the introduction of Moodle to the teaching environment at ITWI.

3.9.1 Exploratory study – participants

The participants in the exploratory study were a small-scale opportunistic sample of eight lecturers and eight students from four different schools across ITWI: the Schools of Business, Engineering, Hotel & Catering and Furniture Design and Technology.

The reason I chose the schools listed above was that my own experience of working in ITWI, coupled with the received wisdom of colleagues, suggested that micro-cultural differences exist in different schools. Since ITWI comprises a multi-campus environment with a diverse range of disciplines, the four schools chosen for the exploratory study represent the diversity of schools at the Institute. The Business School is the largest school at ITWI, with 35 full-time lecturers and approximately 1000 full-time students. The School has been in existence since 1972 when ITWI itself was established. The School offers a range of courses at undergraduate, postgraduate and professional level in the areas of accounting, business, communications, economics, human resource management, information systems, management, marketing and rural enterprise. Structurally, the School consists of two departments: the Department of Accounting & Information Systems and the Department of Management.

The Department of Accounting & Information Systems has built a strong reputation in the area of accounting and offers programmes at technical, degree, postgraduate and professional levels in that discipline. The Department of Management is home to the most popular programme in the School in terms of student numbers, i.e., the Bachelor of Business (BBS). This is a "general business" oriented degree programme with a number of options for specialisation, and with intake at both National Framework of Qualifications (NFQ) level 7 and NFQ level 8. The BBS (all years) accounts for 60% of the entire student enrolment in the School of Business, i.e., ca 600 of the 974 students (as of May 2014).

The Engineering School is a community of approximately 830 full-time students and 80 full-time academic staff (from across the three engineering departments: civil, mechanical and electronic). The School offers a range of courses at

undergraduate, postgraduate and professional level in a broad range of engineering and technology programmes. Structurally, the School consists of three departments: the Department of Building and Civil Engineering, the Department of Electronic and Electrical Engineering and the Department of Mechanical and Industrial Engineering.
The Hotel and Catering School has approximately 750 full-time students and 30 full-time academic staff. The School offers undergraduate programmes in the fields of tourism, hotel management, event management and culinary arts.
This School is considered a pioneer of education in the hospitality industry with its graduates being recognised and sought by international employers.

The Furniture Design and Technology (hereafter, FDT School) School is home to approximately 250 full-time students and 16 full-time academic staff. The Furniture School is designated as a National Centre for Excellence in Furniture Design and Technology. The FDT School offers undergraduate programmes in furniture design, wood technology and design and technology education. This school was established in 1987 as part of the regional development in the west of Ireland. The FDT School has well-established relations with the Irish furniture and wood products industry and has links with colleges in Europe and the USA. In addition, it partners with a broad range of progressive and advanced manufacturing companies located throughout the world as part of a substantial work placement (internship) element of all industry programmes.

As part of its teacher training programme for technological subjects up to the Irish School Leaving Certificate, the FDT School has links with post-primary schools throughout Ireland for school placements for students. This school is located at a separate campus approximately 70km from the main ITWI campus.

Two lecturers and two students were selected from each of the four schools, based on ease of access and availability. In the exploratory study my intention was to locate a small number of participants from different schools (contexts) in ITWI.

The participant lecturers, eight in total – comprised one male and one female lecturer from each of the four schools. The age range of the lecturers was between 32 and 45 years old. They had all been full-time staff of ITWI for between four and 12 years. With regard to technology-mediated practice the lecturers all used Microsoft PowerPoint to create and deliver lectures in a traditional classroom setting. The only exceptions were for the lecturers in the Engineering School and one of the lecturers form the FDT School who delivered some of their classes in a computer laboratory setting where they used relevant software for example computer aided design. All eight participants used Microsoft Word to prepare text documents for example handouts for lectures. They also used email to communicate with staff and students when necessary. Seven of the eight lecturers used Microsoft Excel to record student results and then posted a hard copy on their School noticeboard. One lecturer from the Hotel and Catering School had begun (two months before the exploratory study began) to utilise Moodle to record and distribute results to students. All of the eight lecturers used Moodle however, this was limited to using Moodle as a repository for lecture notes for ease of student access. All eight lecturers used Moodle to store PowerPoint slides that they had previously displayed in their classes for students to transcribe. Four of the lecturers (from the Engineering School and the FDT School) used Moodle to distribute their PowerPoint slides before their lectures. Only the aforementioned lecturer from the Hotel and Catering School used it to record and post student results. All lecturers had access to a shared drive on the college network where they could access programme related documents for example, syllabi etc. For all lecturers their practice was in a traditional classroom setting where they had access to a desktop computer connected to both the college network and the internet. The responsibility for all lecturers' IT training for lecturers lay with the Computer Services Department at ITWI. From 2007 the Computer Services Department, made basic Moodle training courses available for lecturers across the Institute rather than on an individual school basis.

This opportunistic sample was not used to make any generalisations but to gain information and a sense of people's views on the use of Moodle in their

pedagogic practice. This in turn would help me decide how best to proceed with the study. This approach is consistent with Cohen et al. (2011, p. 156), who suggest that opportunity sampling "does not seek to generalise about the wider population".

It is important to emphasise that the primary intention of my study was to investigate the impact of cultural context on the acquisition of Moodle from the lecturers' perspective. However, at this exploratory stage, I chose to interview a small sample of students as I believed this would deepen my insights and help me to make a more informed decision on how to proceed with the main study. The participants were interviewed on their introduction to, and use of, Moodle at ITWI. Details of these interviews are discussed in the next two sections.

3.9.2 Exploratory study – lecturer interviews

Semi-structured interviews were conducted with the participants. Each lasted approximately 20 minutes and was digitally recorded for later transcription. Semi-structured interviews are a useful way of enabling participants to discuss their interpretations of the world in which they live (Cohen et al., 2011) and so provided an appropriate medium through which I could gain an understanding of lecturers' views and opinion about the use of Moodle in their pedagogic practice. According to Bryman (2008), in qualitative research, semi-structured and unstructured interviews are the tools of choice as they allow the participant to articulate his/her perspective, and they also give the researcher the flexibility to depart from pre-existing questions in order to respond to new directions suggested by the subjects. This dual feature of the interviews proved to be very helpful in my study.

Importantly, the interviews captured the lecturers' views on the general usage of Moodle in their own schools. The use of semi-structured interviews also allowed for comparison between lecturers and students from different schools in the exploratory study; this gave a sense of the experience of Moodle in the different schools. Using semi-structured interviews meant that the sequence of questions could be determined in advance so that all the interviewees were asked the same

questions in the same order, thus ensuring consistency. The choice of semi-structured interviews was also influenced by Lincoln and Guba (1985, p. 269) who suggested that they are useful when the enquirer "does not know what he or she doesn't know". I embarked on the exploratory study to get a broad sense of the lecturers' and students' views and experience of Moodle as a way of refining the design of the main study and deemed semi-structured interviews the most appropriate way to achieve this.

In preparing the interview schedule, I took guidance from Spradley (1979) and Cohen et al. (2007). In the spirit of emergent design in the exploratory study (Lincoln and Guba, 1985), the content of the questions was influenced by the material obtained from my own preceding observations and interactions with colleagues about the use of Moodle. I categorised the questions in a way that explored the following issues: (i) how lecturers were introduced to Moodle, (ii) lecturers' attitude to the arrival of Moodle, (iii) the impact of Moodle on lecturers' practice, (iv) lecturers' use and knowledge of Moodle, and (v) the lecturers' future development of Moodle competencies.

The interviews were conducted in different settings across ITWI (classrooms, office spaces, etc.), as was convenient for the participants. Pseudonyms were used in the transcriptions to protect the identity of the participants. A sample of the questions asked in the lecturer interviews in the exploratory study can be found in Appendix D.

3.9.3 Exploratory study – student interviews

Semi-structured interviews were also used with the students participating in the exploratory trial. Each interview lasted between 20 and 30 minutes. The same rationale as described above for the lecturer interviews was applied to the student interviews. The student interview questions were formulated using the same categories as described for the lecturer interviews; however, where appropriate, the questions were rephrased to gain the students', rather than the lecturers', perspective. Students were asked about the extent to which they were exposed to Moodle and what they thought of it as part of their learning

environment. A sample of the questions asked in the student interviews in the exploratory study can be found in Appendix E.

3.9.4 Exploratory study – data analysis

As an entry point into analysing the data collected during the exploratory study, I began by using thematic analysis. Thematic analysis is a foundational method for qualitative analysis (Braun and Clarke, 2006). It is a way of organising qualitative material, such as interview data, in order to draw out meanings in the form of themes. Themes are recurrent topics, ideas and statements that are identified by seeing patterns in ideas or experiences across several people in the interview data. A theme is regarded for its prevelance or "keyness" in relation to its relevance to the research question (Braun and Clarke, 2006). The relevance to the research question is the researcher's decision, and the role of the researcher as an insider is critical.

Guided by the Open University (Open University, 2007), I performed the thematic analysis in three stages: (i) creating the transcripts of the interview recordings, (ii) familiarisation with the transcripts through successive readings, and (iii) coding of the transcripts. Following Braun and Clarke (2006)—who note the importance of "what counts as a pattern/theme, or what 'size' does a theme need to be"—I coded the transcripts in a manner consistent with Langdridge's (2004) three-stage process: first order (descriptive), second order (combining descriptive codes) and third order, which involves drawing out the overarching themes in the data. These overarching themes represent the more general concepts and patterns in the data. A summary of the themes that emerged from the analysis can be found in Appendix F. The themes that emerged indicated the existence of a complex phenomenon. For ease of readership and understanding these themes are presented in both chart and list form in Appendix F.

While applying thematic analysis was useful in gaining some insights from the data, I was specifically interested in understanding the relationship between cultural context and human activity. In order to satisfy this understanding, and in the exploratory spirit of the research, I looked to activity theory to perform

further analysis on the same dataset. It was clear from the thematic analysis that a new technological tool had entered the cultural context at ITWI and caused some disturbance which the lecturers were not attempting to control and overcome. This realisation oriented me further towards activity theory as a method for deeper and more expansive analysis. As already stated my aim in this study was to elicit data about the social and cultural components of the lecturers' context in order to understand if it had an impact on their engagement with Moodle. Nardi (1996) describes activity theory as a powerful descriptive tool that offers a set of perspectives on human activity and a set of concepts for describing that activity. In this context I considered activity theory to be an appropriate conceptual framework in which to explore the relationship between context and practice.

Engeström's (1987) theoretical model of activity theory provides a useful structured and descriptive format under the elements given in his triangular formation: tools, subject, object, rules, community and division of labour. The implementation of this formation gave me a socio-cultural perspective on the data. Activity theory's focus on activity as the unit of analysis also allowed me to focus on the participants' activity systems within the social, cultural and historical context where they create meaning. My approach with activity theory was as follows: (i) I organised and conceptualised the data based on the structural elements of Engeström's (1987) triangular formation, and (ii) using activity theory's concept of contradictions, I identified potential tensions, obstacles and misunderstandings in the lecturers' activity system.

The preliminary findings from the exploratory study (see summary in Appendix F) confirmed for me that activity theory was a suitable analytical framework for proceeding with the main part of the study. Activity theory provided a method for directing the research towards the real-life activities of lecturers in their work environment. At this point, I could see that activity theory would enable me to establish the motives, objects and outcomes which drive human activity and the social and cultural relationships amongst groups of people. I believed it would allow me to understand how lecturers shaped, and were shaped by, their

appropriation of Moodle in their pedagogic practice. This oriented my analysis towards answering the research question: what is the relationship between cultural context and lecturers' engagement with Moodle?

The preliminary findings also suggest that engagement with Moodle may vary across the different schools in ITWI. This is consistent with Crook (1996), who argues that across different settings there may be significant variation in how radically the same technology serves to restructure the activity of learning. I wanted to explore if this might be the case in ITWI. Although the sample in the exploratory study was small, the findings suggested a strong desire among lecturers across ITWI to develop competencies in the use of Moodle. Even though this desire was apparent, there was also a sense that lecturers did not know how to initiate the development of these competencies. This indicated the value in pursuing the research further in order to shed light on how cultural variations might impact upon the appropriation of the technology at ITWI. The lecturers' desire to develop Moodle competencies suggested that an intervention methodology was appropriate. In order to understand how the lecturers could learn to use Moodle, I believed that intervening in their practice through a DWR-based intervention would enable me to gain an understanding of their work practices and help them to identify the potential for changes in these practices. In the next section I discuss how the findings from the exploratory study influenced my decision on research methodology.

3.10 Rationale for a DWR-based intervention

The groundwork for selecting activity theory as the principal theoretical framework for the study lay in a combination of the literature review and the findings from the exploratory study. It must be acknowledged that choosing activity theory has methodological implications. It naturally, though not exclusively, orients one towards intervention work. Crucially, there is a long history of activist and interventionist work associated with CHAT (Sannino, 2011), for example Vygotsky's establishment of a psychological laboratory in Russia in the 1920s (Yaroshevsky, 1989) and Davydov's (2008) longitudinal large-scale interventions in developmental teaching in schools. Engeström's

longitudinal intervention study of children's medical care (Engeström, 2000a) and Daniels et al.'s (2007a) activity-theory-based research intervention which explored professional learning are recent examples of studies that adopted the Engeströmian Developmental Work Research (DWR) interventionist methodology. I decided to pursue the main study by conducting an intervention based on Engeström's DWR methodology for the reasons disussed in the following paragraphs.

Firstly, the exploratory study indicated that the introduction of Moodle had caused a disturbance in lecturers' pedagogic practice. Engeström (2000b) asserts that in DWR interventions change is understood to be grounded in disturbances experienced in workplaces. He also suggests that change is driven by reconceptualising the object and motive of collective activity. Movement between these two levels is central to the methodology of DWR. As such, I saw a DWR-based approach as the appropriate method for me to investigate the extent of disturbances caused by the introduction of Moodle. The exploratory study also indicated that the lecturers wanted to develop their skills in the use of Moodle but lacked the knowledge to enable their progression. I believed an intervention would be instrumental in helping the lecturers to find a solution for themselves because DWR intervention work enables participants to solve problems and change their situations (Sannino, 2011).

Secondly, the exploratory study also suggested that a departmental effect existed in relation to lecturers' engagement with Moodle. I saw an intervention as a way to explore this issue and to understand if cultural context impacted on engagement with Moodle.

Thirdly, the literature review highlighted that the combined use of activity theory and an interventionist methodology enables practitioners to understand disturbances in their work practices and to bring about collective transformation and development, if that is necessary. As an insider researcher I was interested in understanding the complexities of the lecturers' cultural context and how it impacted upon their Moodle usage. But I was also motivated to utilise my

research to bring about positive changes in the lecturers' working lives, if that was possible, and I believed an intervention was the appropriate method through which to achieve this.

Finally, my choice to use a DWR-based intervention in this study was further inspired by the four epistemic threads that underlie DWR methodology (Engeström, 2011). These threads are: (i) the ability to construct a conceptual representation of the participants' activity system which mediates the analysis and redesign of the current activity; (ii) the use of the notion of contradictions as a source of change and development in the participants' activity system; (iii) the notion of agency as a layer of causality: participants can explore if their own motives are contradictory as they interpret their own activities and are given the potential to individually and collectively transform their current circumstances; and (iv) the possibility of forming a new concept of the participants' activity which was unknown at the beginning of the Intervention. Inspired by these underpinnings, and in order to fully understand the impact of the social setting on lecturers' engagement with Moodle, I chose an intervention in lecturers' practice using a DWR-based intervention as the appropriate method to conduct the main investigation in this study.

In summary, influenced by the DWR intervention methodology in facilitating transformations, and informed by the data analysis from the exploratory study, I planned a DWR-based intervention. This methodology, as presented by Engeström (2007c), is concerned with solving actual problems in local, real-life work communities in a series of intervention sessions known as the Change Laboratory. At this point it is important to emphasise that I do not use the Change Laboratory method as Engeström (2007c) described it, but I do draw on its principles in a number of ways. It is for this reason that I call my intervention a DWR-based intervention.

3.11 **The research questions**

The research questions and the design of this study were shaped by Engeström's (1987) theoretical ideas on activity theory, aspects of Bernstein's (1996)

pedagogic theory and my experience from the exploratory study. The focus of this study is on understanding the relationship between cultural context and lecturers' engagement with Moodle. As I decided to investigate this relationship by using a DWR-based methodology to intervene in lecturers' practice, I formulated the primary research question as follows:

> What happens when a DWR-based intervention is conducted in lecturers' pedagogic practice in order to understand if cultural context impacts on their engagement with Moodle?

In order to answer this question I further formulated the following questions:

> Q1. What tensions and contradictions do the participant lecturers experience, and how does a DWR-based intervention facilitate a resolution?
>
> Q2. What changes does a DWR-based intervention have on the participant lecturers' discourse, the social structure of their work context and their pedagogic practice?
>
> Q3. What are the wider-institutional impacts of a DWR-based intervention conducted in one school within a higher education institution?

3.12 Planning the DWR-based Intervention

In order to understand if cultural context impacted on lecturers' engagement with Moodle, I needed to explore any transformations that occured in the lecturers' thinking when they investigated their work practices within a DWR-based intervention setting. Engeström and Sannino (2010) suggest that there is a growing need in work communities for support and facilitation in deliberate efforts to reach qualitatively new modes of work activity. Higher education is no exception, and the introduction of technologies like Moodle is one example of a situation where I believe that this support and facilitation is necessary. I regard this study, which reports an intervention in lecturers' work practice, as one approach that attempts to address this issue.

I began my preparation for the DWR-based Intervention by drawing on a set of guidelines forwarded by Engeström and Hakkarainen (2003). These guidelines,

as listed and explained below, gave structure to my preparation for the DWR-based Intervention.

Select a piloting field which has strategic advantage

Initially, I aimed to conduct interventions at three different schools at ITWI. However, after completing the exploratory study and recognising the complexity of issues arising as the Intervention progressed in the first school, it seemed realistic to concentrate the study in one school. I did this by conducting a deeper analysis (the DWR-based Intervention) of the circumstances in the Business School where I work as a full-time lecturer, which, I felt, gave me a strategic advantage since I was known in the School (the largest at ITWI).

As the Intervention progressed I also conducted a focus group at another school, the FDT School. I believed this approach would reflect different perspectives on the phenomenon (Sarantakos, 2005). This is also consistent with Merriam (1998), who notes that the selection process in qualitative research often requires two steps, namely selecting a general case to be studied and then sampling from within the case. In this study I selected participants from four schools in ITWI (the general case) to conduct the exploratory study. Based on my findings from this exploratory study, I selected the Business School (sampling within the general case) as the context for the main study, i.e., the DWR-based Intervention.

Participant selection

The participant lecturers in the DWR-based Intervention were a purposive sample selected to represent a spread of age, gender and subject/practice areas in the School. Twelve lecturers were invited to partake, and all agreed. There were six male and six female participants: 10 were permanent, full-time lecturers and two were pro-rata lecturers with full hours. The participants' teaching experience ranged from three to 19 years, as shown in Table 3.1 below. Pseudonyms have been used to protect the identity of the participants.

Ref. no.	***Name***	***Gender***	***Age***	***Years in lecturing position***	***Subject area***
L1	Kieran	Male	27	3	Strategic Management
L2	Noel	Male	36	3	Accounting
L3	Cian	Male	37	10	Human Resources
L4	Henry	Male	61	18	Computer Networks
L5	Oliver	Male	39	9	Database Systems
L6	Paul	Male	49	19	Information Systems
L7	Maura	Female	52	12	Management
L8	Polly	Female	48	11	Economics
L9	Ciara	Female	35	8	Computer Applications
L10	Emma	Female	47	10	Marketing
L11	Norah	Female	37	7	Law
L12	Clara	Female	40	8	Mathematics

Table 3.1: DWR-based Intervention participants

There was no prerequisite in selecting the participants that they should or should not be Moodle users. In fact eight of the 12 participants were Moodle users but only in so far as they used it to store lecture notes for student access. None of the participants used any of the Moodle features beyond that of a data repository. Regarding their existing experience in relation to technology-mediated practice all of the lecturers used Microsoft PowerPoint in the delivery of their lectures. In addition to using PowerPoint two of the lecturers (in Accounting and Mathematics) said they also used a "chalk and talk" method of delivery. All 12 of the lecturers used Microsoft Word to create lecture handouts, when they deemed it necessary as well as their PowerPoint slides. To record students results, six of the participants used Microsoft Excel, two used the table facililty in Microsoft Word and four created lists of students names and results in Microsoft Word. All 12 posted hardcopies of students, results on the School's noticeboards where students could access their results. All 12 used email to communicate with management, other lecturers and also students. Five lecturers—four of the participants who taught technology related subjects and one who taught accounting—taught some of their classes in computer laboratories where they used software packages such as Microsoft Office Suite, Oracle database software, Web Development software and Accounting software. All of the lecturers used what was known as the School's shared drive (a secure shared storage area on the college computer network) to access relevant course

documents for example syllabii, approved course schedules, class lists etc. This drive was only accessible only from within the college and not remotely. None of the 12 lecturers had any experience of eLearning in terms of delivering or taking a course online. All of the participants had a personal work computer with full internet access in their offices, and all classrooms had a computer for the lecturers' use which was connected to the college network and had full internet access.

It is important to clarify my relationship with the participants, both prior to the research and during the DWR-based Intervention. At the time I conducted this research I was a full-time lecturer in the Business School for three years. However, I had also worked as a full-time lecturer at the Busiess School at the Castown campus for seven years previous to that. The 12 participants in the study were my work colleagues for three years before this research began. As such my role was one of practitioner and researcher which Robson (2011) identifies as having both advantages and disadvantages. In this study my relationship as a work colleague had advantages. Firstly, it was practical at the time research the work setting at that time where I was aware of the lecturers' desires to integrate Moodle into their pedagogic practice. Secondly, the context of the study, its history and development was known to me. My knowledge and experience as a lecturer enabled me to fully understand the positions of the participant lecturers. Robson (2002) also identifies issues of access, intrusiveness and familiarity and rapport for insider-researchers but these issues did not arise as problems in this study. It is recognised (Oliver, 2003; Robson, 2011) that when the researcher is a colleague of the participants and gains knowledge of a confidential nature through the research this can affect the working relationships with the participant colleagues. It also questions the objectivity of the researcher. Mindful of these potential problems I followed strategies for coping with multiple roles in the research context as suggested by Oliver (2003). As the Intervention progressed my relationships with the participants developed a level of trust was established as the participants benefited by developing technological skills that they could use in their practice by participating in the DWR-based Intervention.

Decide how to obtain commitment from the participants to the Intervention

As I explained above, I chose a purposive sample for the DWR-based Intervention. On inviting the participants to take part, I explained that the motivation of participants to work with one another and with the researcher (me) to generate solutions to problems they experienced in their work environment is inherent in the design of DWR methods. I could see that the participants were interested in engaging with the Intervention once they could envisage a reward in it for themselves. To obtain the commitment of the participants, I explained to each of them that it was my intention to create an environment in the DWR-based Intervention where they could analyse their current work practices with Moodle, based on their historical development, and where they could think about possible future transformations in their practice. While it was not possible for me at the outset to ascertain whether participants would actually attend all the sessions for the DWR-based Intervention sessions, I did get a sense that they were interested in, and positive towards, the research. They wanted to integrate Moodle with their pedagogic practice, and they saw this study as a research-driven local initiative with the potential to help them move collectively towards achieving their goals. Thus, the potential for reward encouraged participation and commitment.

Decide on a location for the Intervention sessions

At the outset I organised a meeting room as a dedicated space where the DWR-based Intervention sessions could take place. Consistent with Engeströmian DWR methods, the location was within the institution where the lecturers worked. The room was equipped with a white board, a flip-chart, a computer and a video recorder in order to facilitate collective expansive learning and to allow for the collection of data during the sessions (Engeström et al., 1996). However, after the second DWR-based Intervention session, the participants requested that the remaining sessions be held in a room where they all could have access to computers. I facilitated their request and organised the sessions in a computer laboratory in the Business School. DWR methods allow for this flexibility in the spirit of experimental and emergent design. This also aligns with DWR methods where the practitioners are considered the main drivers of the process, while the

researcher or interventionist facilitates and supports the process. This also represents transformative agency (Engeström, 2009), whereby the participants' decision on how the intervention should progress is a concrete manifestation of their agentic will.

Gather the mirror data

The role of mirror data is to focus the participants on aspects of their work experiences and practices that are challenging and problematic. The findings from the exploratory study provided some of the mirror data used to begin the DWR-based Intervention. However, similar to the Engeströmian DWR method, I also used individual interviews and observations to gather mirror data to begin the DWR-based Intervention. Both of these instruments are outlined below.

Lecturer interviews

Individual, face-to-face, semi-structured interviews were the principal method of data collection employed both in the exploratory study and in gathering mirror data for the DWR-based Intervention. The rationale for choosing semi-structured interviews in the exploratory study is described in section 3.9.2 and also applies here in the DWR-based Intervention. Semi-structured interviews were appropriate in that they allowed for the interviewees to drive the discussions in directions that were important to them. I could then follow their lead and probe deeper if necessary, thus collecting a rich data set, as recommended by Patton (2000). Furthermore, as semi-structured interviews facilitate participants in the provision of historical information (Creswell, 2009), they were advantageous in my study with its theoretical basis of CHAT.

Individual, semi-structured interviews were carried out with the participants before I began the DWR-based Intervention. The interviews lasted 20 to 30 minutes. They were digitally recorded and transcribed in full as soon as possible after the interviews. Psuedonyms were used to protect the identity of the participants. In these interviews the content of the questions was influenced by the material obtained both from my own observations and also from the interviews conducted during the exploratory trial.

In addition to the findings from the exploratory study, I also used Duignan, Noble and Biddle's (2006) interview resource, which is a refinement of Kaptelinin, Nardi and Macaulay's (1999) CHAT-based activity checklist, to formulate interview questions. Kaptelinin et al. (1999) devised the checklist based on the five foundational principles of activity theory (see section 2.15.1). It can be used as a guide for the areas to which a researcher should pay attention when designing interview questions in order to understand the context in which a specific technological tool is to be used. However, Duignan et al. (2006) refined the checklist and produced a practical resource to be used primarily, although not exclusively, in the computer interface design process. This resource is designed to overcome any limitations of Kaptelinin et al.'s (1999) checklist in being a useful resource for issues to cover in interviews. I found this resource to be a useful guide in designing relevant interview questions that allowed the participants to draw unforeseen connections between their own context and activity theory concepts.

The questions were open-ended to encourage the respondents to develop a narrative around their use of Moodle. Questions probed the lecturers' thinking on: the use of Moodle as a teaching or learning tool, rules in the teaching environment, who is responsible for what, motives for acting on objects and the objectives of Moodle usage. The interview schedule is available in Appendix G.

Observations

I employed participant observation to gather mirror data both at the beginning of the DWR-based Intervention and throughout the study. I used it to select and record the participants' behaviour in their work environment. I used both direct observations and casual conversation as observation techniques. I recorded all my observations in my field notes, getting clarification from participants when necessary. Observation is useful for generating in-depth descriptions of organisations or events and for obtaining information that is otherwise inaccessible. It is a widely used form of data collection in qualitative enquiries (Cohen et al., 2011). In this study I am in the position of an insider researcher (the participants in the DWR-based intervention are my work colleagues), so

becoming a participant observer does not involve the intrusion (Sarantakos, 2005) that might arise in other cases. I did experience the role of the participant observer, which Merriam (1998, p. 103) describes as somewhat "schizophrenic", since I was tasked with balancing participation and detachment. This was necessary in order to observe and analyse the study as it evolved.

I was diligent in making handwritten field notes of all my observations throughout the study, using Spradley's (1980, p. 78) checklist for guidance. Kawulich (2005) notes that field notes are the primary method for gathering data from participant observations. This included notes recorded during interviews, DWR-based sessions and any informal encounters with participants outside the confines of the DWR-based Intervention such as corridor- or canteen conversations. As an insider researcher I was mindful of the possibility of bias as a limitation of participant observation (Kawulich, 2005). However, since I also used other qualitative instruments (interviews and intervention sessions) in accordance with DWR methodology, it is difficult to fail to report on the negative aspects of cultural context.

As the study progressed I also used data collected during the Intervention sessions as mirror data for later sessions. This was part of my role as researcher, which I discuss in the next section.

3.13 **Researcher's role and responsibilities**

The nature of DWR interventions is that they are demanding and dynamic processes. As an involved process the DWR-based Intervention which I conducted necessitated a distinct role for me as both the researcher and interventionist. My responsibilities included the following:

- Obtaining permission from management to conduct the DWR-based Intervention in the Business School.
- Obtaining permission from management to allow an external expert to join the Intervention when the need arose.
- Scheduling the DWR-based sessions to accommodate all participants.

- Managing all aspects of the intervention including location, dates, time, data collection and videographer.
- Moderating the sessions.
- Provoking and sustaining a collaborative transformation process which was led by the participants.
- Analysing data and preparing new stimulus data for the subsequent session.
- Clarifying and validating the data collected with the participants, where necessary.

The role of the researcher cannot be underestimated in DWR intervention work. An intervention is a creative endeavour; it requires the researcher to grasp the local circumstances and the potentials of the activity system under investigation. While the efforts of the participants are crucial to the success of any intervention, the researcher is ultimately responsible for driving the process. As an insider reseracher I had the advantage of knowing the work environment. But I also faced the challenge of analysing my own actions and interactions with the participants during the study, always remaining mindful of how I might influence the process. Influenced by Engeström (2007b) I concentrated on facilitating the participants in developing possibility knowledge on how they might change their engagement with Moodle as they desired. This meant creating the environment which set the participants' activity in motion through the deliberate work of the DWR-based Intervention.

My role involved facilitating the participants by adopting the principle of double stimulation. I studied the subjects' adoption and use of the second stimuli as they attempted to solve their problems (the first stimuli). It was my responsibility to make sure that the tensions and disturbances in the workplace were made visible to the participants. Furthermore, I facilitated the participants in engaging in a dialectical process during the DWR-based Intervention sessions in order to analyse how disturbances in their workplace give rise to contradictions in their activity system. Engeström (2000b) notes that considerable groundwork is required from the researcher to make contradictions visible; it requires

accessing powerful field data. Further groundwork on the part of the researcher is necessary to enable the participants to expand their work activities to newer forms of practice. New models of the future activity must be brought to the table for discussion and debate, and then action is required to implement new forms of the original activity. This is a complex process which includes the generation of a new mentality. Employing a DWR approach is experimental in nature, and, as such, it is a demanding effort for the researcher. According to Engeström:

> This type of design requires a bold experimental attitude rather than the attitude of a casual observer and facilitator. Bringing about and traversing collective zones of proximal development is experimentation with activity systems. When practitioners face a mirror depicting their own actions and disturbances, they often experience them as personal failures or even crises. Powerful and unpredictable cognitive, emotional and social dissonances are triggered.
>
> (Engeström, 2000b, p. 21)

This resonates with my experience of conducting a DWR-based intervention. As a researcher the process was empirically demanding, especially the tasks of recording and analysing data in a real-life setting. In addition, as they arose, I supported the processes that Engeström (1999c) notes above are part of DWR-related work. Crucially, it is also important for the researcher to record his or her own actions and interactions. As Engeström (2000b, p. 21) states the intervention itself must also become an object of rigorous study. We can say that the research is a two-way mirror. In the next section I discuss how I conducted the DWR-based Intervention.

3.14 **Conducting the DWR-based Intervention**

The DWR-based Intervention took place between January and December 2010 across six sessions. These were scheduled at times that suited the participants, who were constrained by busy teaching schedules. As I stated in the discussion of the Engeströmian DWR methods in chapter two, the principle of double stimulation forms the basis of the intervention methodology, and I also adopted it in my study. To begin the DWR-based Intervention, the participants came

together in the allocated meeting room. They were presented with mirror data (the first stimulus) on the use and appropriation of Moodle in their pedagogic practice. The data comprising the first stimulus made the problematic aspects of everyday action visible to the participants and highlighted the need for a new solution; this prompted a collaborative problem-solving process (Virkkunen and Schaupp, 2011). I presented the mirror data in the form of quotations and excerpts from the participants' individual interviews (see sections 3.9.2 and 3.9.3). I also included some of the findings from the exploratory study which I considered relevant. The participants observed the data and related it to their own experiences and views in a dialogic process, thus modelling their present situation. The mirror data served to focus the participants discussion on their own practices and clarify their rationales to the group.

The mediating second stimulus was a general conceptual model based on Engeström's (1987) triangular formation of activity theory, which I presented to the lecturers. I was mindful that the participants were not familiar with activity theory, so in order for this representation to make sense to them I used the elements of the triangular formation (subject, object, tools, rules, community and division of labour) to formulate probing questions which I put to the group. For example: (i) what constrains you and what supports you in using Moodle in your practice? (a rules question), and (ii) who is responsible for your use and appropriation of Moodle? (a division-of-labour question). (iii) what are you trying to achieve? (an object question); and, (iv) who else is involved in your work practices? (a community question). These questions guide the participants through discussions about past, present and future practices. They are revisited many times during the Intervention. The participants discussed and debated these questions based on their assessment of the situation. This allowed the discussions to move towards identifying the most problematic areas for the lecturers and those needing further investigation and solutions. This process involved generating ideas and tools to find solutions. As the discussions progressed, utilising the methodological principle of moving from the abstract to the concrete, the participants were able to identify periods when their activity system was relatively stable, thus analysing their situation in historical and

systemic terms. The six DWR-based Intervention sessions were all video-recorded and transcribed verbatim as soon as possible after each session.

Consistent with Nummijoki and Engeström's (2009) observations, dilemmas emerged early in the DWR-based Intervention, notably in the first session, indicating that contradictions in the activity system were likely to be quite mature and possibly aggravated. Thus, contradictions were explicit from the beginning of the Intervention. The progress of the Intervention was then driven by the participants, who took responsibility for their own development of Moodle competencies. They expressed their need to find an expert outside their own organisation who would advise them on the potential Moodle offered to enhance their practice. The guiding principle of DWR interventions is to jointly generate a new model or solution of a qualitatively new kind of activity. The participants request for an external expert is evidence of their move towards developing a solution to their own problems with engaging with Moodle. Facilitating their request I located an external expert who joined the Intervention at the second session. The participants engaged this expert in discussion about the potential of Moodle to enhance their pedagogic practice. Focusing this session I facilitated the participants by provoking the discussion around the elements of their activity system, for example, Moodle represented a relatively new tool for the lecturers and the idea of them securing their own external expert was a rules issue. I also encouraged the lecturers to focus on the object of their activity, which at that point was to develop competency in the use of Moodle. I was careful not to overburden the participants with the theoretical detail of activity theory but I did refer to it as a way of framing and focusing the discussions. During this session the lecturers asked the external expert to join subsequent sessions and decided that they would incorporate customised Moodle training sessions into the DWR-based Intervention sessions. An analysis of the DWR-based Intervention is presented in chapter four.

It was not possible for me to know at the outset how many DWR-based Intervention sessions would take place. At the end of the second session, the external expert agreed to work with the participants in developing their Moodle

competencies within the frame of the DWR-based Intervention. The participants suggested that he participate in the following three sessions, and he subsequently agreed to work with me as I facilitated these sessions. While I worked in collaboration with him, I also took the role of participant observer. At that point, I planned that sessions three, four and five would involve the external expert and session six would be a reflective session with the participants.

The introduction of the external expert and his involvement in the subsequent DWR-based sessions can be viewed as an original methodological contribution to the DWR method. Generally in DWR formative interventions a team of researchers facilitate the participants in analysing and solving problems in their work practices from the outset of the process. However, in this case, the participants requested an external expert to be part of the sessions as they saw him as somebody who had both teaching experience and expert knowledge of Moodle. To enable the external expert to work with me in facilitating the remaining sessions, I introduced him to the CHAT framework and the DWR-based method I was using in the Intervention. This was necessary in order to keep the sessions focused on the lecturers' activity system. This also allowed me to facilitate the participants by incorporating customised Moodle training into the DWR-based sessions. The presence of the external expert in sessions three, four and five in the capacity of a Moodle trainer represents a different way of working within the DWR method; it is an original methodological contribution.

I observed how the DWR-based Intervention facilitated the participants in moving from individual actions and immediately visible problems to analysing the systemic causes of the problems. They proceeded to an expansive reconceptualisation of their activity with Moodle and began to reconfigure the structure of that activity. In the subsequent DWR-based Intervention sessions with the external expert, the participants returned to the level of individual actions, developing and implementing corresponding new instruments, collaborative relationships, rules and divisions of labour. Although the process was led by the participants requests I constantly focused their session

discussions by asking relevant probing questions framed by the elements of activity theory.

Consistent with emergent design, I recorded how the sessions unfolded and ultimately led to transformations in lecturers' thinking and activity. Engeström et al. (1996) see DWR sessions as a tool for transforming work activities. The participants collaborated with one another and with the external expert to develop Moodle competencies. They tried these new competencies in their practice and reported back on their experience in subsequent sessions. The sessions were organised around concrete tasks based on the use of Moodle in the lecturers' pedagogic practice. The lecturers jointly analysed, designed and transformed their work activities along with their concepts of working with Moodle. As an insider researcher I recorded the process as it evolved. Although the participants wanted the sessions to continue further, owing to the practicalities of workload and time constraints, I limited the study to six sessions.

DWR–based Intervention Sessions	**Date**	**No. of Participants**	**Duration**
Session 1	March 2010	10	2 hrs 15 min
Session 2	April 2010	10	1 hr 50 min
Session 3	May 2010	10	1 hr 40 min
Session 4	September 2010	9	2 hrs
Session 5	October 2010	10	1 hr 40 min
Session 6	December 2010	9	1 hr 30 min

Table 3.2: Data collection points for sessions – March 2010 to December 2010

During the 12-month duration of the DWR-based Intervention, I collected a significant volume of data, (see section 3.16) including audio recordings of individual interviews, video recordings of the DWR-based Intervention sessions and my own observations recorded in my field notes. My analysis of the data revealed that a transformation had taken place in lecturers' thinking as a result of participating in the Intervention. The participants had formed a small working group and had moved forward in their use of Moodle. I made a decision at this

point to focus the study on what had emerged as significant outcomes. These are as follows:

(i) Reflecting on the DWR-based Intervention, I observed that the small working group that emerged from the Intervention operated outside of the larger Business School group to which they belonged. I wanted to compare the thinking of the lecturers who were part of the new working group with that of lecturers in another school at ITWI. I decided to conduct a focus group interview with a group of lecturers from the FDT School to investigate how they thought about and used Moodle in their practice. The rationale for choosing the FDT School was based on a combination of the findings from the exploratory study and received wisdom at ITWI, both of which suggested that the culture at that school was different to other schools in ITWI in that it was more collegiate and cooperative.

(ii) As the DWR-based Intervention progressed, it became clear that it was having unexpected wider institutional effects. I considered it important to investigate and analyse these effects.

Given that DWR interventions focus on transformations in organisations, it seemed obvious that I should follow the unexpected outcomes of the DWR-based Intervention in this study. People constantly change and create new activities through their activities. New objects are often not intentional products of a single activity; rather, they are unintended consequences of multiple activities (Engeström, 2009). These consequences needed to be studied to uncover the full impact of the DWR-based Intervention, not only in the context where it took place but also in the wider context of ITWI. Consistent with the exploratory nature of the research, I recorded the "unintended consequences" by observation and writing in my field notes. I also interviewed the external expert (Matt) and a project manager (Claire) who became part of the wider institutional effects of the DWR-based Intervention. The use of activity theory enabled me to grasp the changing character and expansion of the object that existed at the beginning of the DWR-based Intervention.

3.15 **Methodological implications of activity theory and Developmental Work Research (DWR)**

The choice of a DWR-based Intervention which is based on activity theory brings with it methodological implications that must be noted. Activity theory can be thought of as a powerful, descriptive and clarifying (Nardi, 1996) framework which has helped researchers to make advances in understanding the ways in which human action shapes, and is shaped by, the contexts in which it takes place (Daniels, 2001). This is true; but adopting an Engeströmian approach, as I do in this study, means viewing activity theory as an interventionist and transformative approach. The task is one of designing practical tools that facilitate a developmental intervention in order to improve work practices by uncovering the dynamics of collaborative work practices in a particular context. Nardi (1996, p. 95) cites the practical methodological implications of adopting an activity-theoretical approach:

(i) The need for a long enough research time frame in order to understand users' objects and their development over time.
(ii) The need to consider the broad patterns of activity in order to understand the direction and significance of an activity.
(iii) The need to use a variety of techniques to gather data including interviews, observations and video recording.
(iv) The need to commit to understanding things from the users' perspective.

In accordance with Nardi's first implication of a lengthy time frame for the research project, the DWR-based Intervention in this study took place over a 12-month period. However, the total time frame, including the exploratory study (which took place before the Intervention), the focus group and exploration of the unexpected outcomes (which took place after the Intervention), was two years. This period was adequate to explore the transformations that evolved as a result of the intervention work conducted.

The second implication cited by Nardi (1996) was the need to gain a broad understanding of the activity in order to understand its direction and significance. The methodological principle of double stimulation employed in the

DWR-based sessions helped to achieve this. While the participants engaged in dialogue and debate, the use of the elements of Engeström's (1987) triangular formation to guide the session discussions ensured that a broad, yet focused, understanding of the lecturers' activity was achieved.

Nardi's (1996) third implication states that the use of activity theory necessitates the collection of a rich and varied dataset. I achieved this through the use of multiple data-collection techniques including interviews, observations and video recording during the DWR-based sessions. Data collected during the early exploratory study and the focus group after the Intervention further ensured a rich and varied dataset.

Finally, Nardi's (1996) fourth implication states the need to understand things from the user's point of view. The nature of the DWR-based Intervention was a process of discussion, debate and negotiation. As the researcher moderating this process, I saw it as part of my role to ensure that all the participants' voices were heard. As such, the DWR-based sessions were rich and engaging. This method, coupled with the individual interviews conducted at the outset, did ensure that all the participants' opinions were heard, recorded and explored. I now turn to a discussion on the data-collection methods which I employed in the study.

3.16 **Data Volume**

The issue of collecting a sufficient volume of data is dilemmatic for all researchers. Bassey (1999) notes the difficulty in defining the term "sufficient" but asserts that it requires a balance between collecting too much and too little data. Too little risks inadequate depth and breadth but too much may produce superficial or unwieldy volumes of data (Bassey, 1999). It is acknowledged that what is important is being in the field sufficiently long to collect good data, i.e. data that concerns depth versus coverage in order for the researcher to thoroughly investigate the phenomenon of interest (Lincoln and Guba, 1985). Table 3.3 below presents an overview of the volume of data collected via the multiple methods utilised across the duration of the study including the exploratory phase. I trust that the volume of data collected displays sufficient

depth to enable me to explore features, develop interpretations and test for authenticity (Bassey, 1999).

Data Collection Method	**Fieldwork Juncture**	**Data volume per collection**	**Data Volume Total**
Exploratory Study			
Individual semi-structured lecturer interviews	April – Oct 2009 Exploratory study	8 participants X 20 -30 mins each	3 hours and 5 mins of audio–recorded interview data
Individual semi-structured student interviews	Apr – Oct 2009 Exploratory study	8 participants x 20 – 30 mins each	2 hours and 55 mins of audio–recorded interview data
DWR-Based Intervention			
Individual semi-structured lecturer interviews	Jan – Mar 2010 Main Study Interviews to gather mirror data	12 participants x 20 – 30 mins each	5 hours and 15 mins of audio–recorded interview data
			Total: 11 hours and 15 mins of audio–recorded interview data
Six DWR-based Intervention sessions	Mar – Dec 2010	9 to 12 participants per session of 1hr 30min to 2hr 15min duration	**Total:** 10 hours and 55 mins of video–recorded interactive sessions
Focus Group Interview	Feb 2011	7 participants in focus group	**Total:** 1 hour and 55 mins of video–recorded group interview data
Post DWR-based Intervention			
Individual semi-structured interview with SIF project manager	Jun 2012	1 participant x 1 hr and 10 mins	
Individual semi-structured interview with external expert	Nov 2011	1 participant x 1 hour and 5 mins	**Total:** 2 hours and15 mins of audio–recorded interview data
		Grand Totals 12 hours and 30 minutes of audio–recorded interview data 12 hours and 50 mins of video–recorded data	

Table 3.3 Data volume collected during the study

I set out in this study to investigate if the cultural context impacted on lecturers' engagement with teaching and learning technologies within the scope one higher education institute, ITWI. For this reason I conducted the exploratory study by interviewing a sample of lecturers and students from four different schools within ITWI as I thought this would broadly represent the diversity of the Institute. The findings of this exploratory study led me to narrow the scope of the study and concentrate the main study i.e. the DWR-based Intervention in one school at the Institute. This enabled me to explore my research topic in sufficient depth (Carlsen and Glenton, 2011). Concentrating the study in one school at ITWI facilitated me in choosing a purposive sample of 12 participant lecturers who were likely to generate rich, dense and focused information on the research question thus allowing me to provide a convincing account (Lincoln and Guba, 2011) of the phenomenon. Crucially, the evolution of the study naturally dictated the expansion of the study's scope after I had conducted the DWR-based Intervention as the wider institutional effects of the study became apparent. I followed and analysed these effects in order to understand and develop a rich description of the institutional impact of the DWR-based Intervention which was decidedly localised in one school.

3.17 **Data-collection methods**

In this study I used a range of data sources, which is consistent with the adopted DWR-based research method. I used interviews, observations, a focus group and the DWR-based Intervention sessions for data collection. As I have already discussed how the data were collected for the exploratory study (section 3.9) and for the DWR-based Intervention (3.12), I will discuss only the focus group in this section.

3.17.1Focus group

A focus group interview was conducted at the FDT School after the DWR-based sessions were concluded at the Business School. A focus group can be described as a form of group interview; however, according to Morgan (1988), it is different in that there is a reliance on the interaction within the group to discuss a topic presented by the researcher, so the result is a collective rather than an individual view. The participants interact with one another rather than having a

backwards and forwards interaction with the researcher, as would be the case in a group interview. Crucially, the data emerges from the interactions of the group (Cohen et al., 2011). In this study the focus group was selected as the most appropriate way of generating a discussion about the introduction and use of Moodle at the FDT School. The aim of the focus group was to gain an understanding of the lecturers' experience of Moodle in their practice at the FDT School.

The focus group was conducted with an opportunistic sample of seven lecturers taken from a pool of a possible 16 at the School. It was video recorded and transcribed later using pseudonyms to protect the identity of participants. The focus group lasted almost two hours. I also made observational notes during the interview. I had obtained permission from the Head of Department at the FDT School and pre-arranged the date and time. The Head of Department was accommodating in helping to arrange the focus group at a time and date when large number of lecturers from the School would be available. He gave me the name of one lecturer with whom to liaise to set up the focus group. I communicated with that lecturer via email and arranged a time and date for the focus group; she in turn communicated the details to all the lecturers at the School. It should be noted that the FDT School is about 70 km from the main ITWI campus where the DWR-based Intervention took place. When I arrived at the FDT School to conduct the focus group, seven lecturers had made themselves available to take part, which falls between Morgan's (1988, p. 43) suggested frame of between four and 12 people for a focus group. During the focus group interview I acted as moderator, stimulating the group with questions, prompting people to speak and then retiring to observe what transpired. Although Cohen et al. (2011) caution against the presence of a dominant member who may suppress others, I did not experience this in my focus group interview. The group knew each other as colleagues in the same school, and everyone participated in a lively discussion.

As a basis for the focus group, I prepared an interview schedule using the same questions that I had used for the individual lecturer interviews in the main study.

The rationale for this was firstly maintain consistency across the study. This strategy worked well in terms of collecting data that facilitated a comparison between the Business School, where the DWR-based intervention was conducted, and the FDT School. The nature of the semi-structured interview questions coupled with the focus group provided a rich form of data collection. The use of open-ended questions from the semi-structured interview with the focus group served to build a discussion that, at times, branched into unintended but insightful directions. The fact that the focus group took place after the DWR-based Intervention meant that I had the knowledge and experience to follow up on issues that were similar to those I had experienced in the Intervention sessions. This facilitated the collection of a richer dataset for comparison between the Business School and the FDT School.

3.18 **Data analysis**

In this section I explain how the data analysis was conducted. My approach to data analysis was driven by my research question. I wanted to investigate if cultural context had an impact on the use and appropriation of the VLE Moodle. The purpose of the exploratory study was to explore people's experiences of the introduction and use of Moodle in their pedagogic practice. I believed this approach would direct me towards the most appropriate method for carrying out the main study. In section 3.9.4 I explained how the data collected during the exploratory study were analysed. I explain in the next section how the data analysis from the main study was conducted. It is important to emphasise that data collection and data analysis occurred concurrently in this study. This is an important feature of formative interventions and also a defining characteristic of qualitative research (Sarantakos, 2005).

3.18.1DWR-based Intervention data analysis

During data analysis I engaged in reading, re-reading and questioning the data to identify how the information from the qualitative data fitted into the model of the activity system (Edwards et al., 2010). Employing activity theory as an interpretive tool imposes a sociocultural perspective on the data eventhough the exploratory nature of the research questions supports an inductive approach to

analysis. With its predefined domains or categories of subject, tool, object, outcome, rules, community and division of labour activity theory imposes these classifications on the data. Since these classifications pre-date the data in what Miles and Huberman (1994, p.61) call "general domains" I was able to develop sub-groups within these classifications for example object and tool, subject and community and, division of labour and tool. In addition the use of Duignan, Noble and Biddle's (2006) activity-theory-based interview resource helped to classify interview data into the aforementioned general domains and sub-groups. Once data was identified as belonging to an activity theory domain I referred to the Constant Comparative Method (Lincoln and Guba, 1985; Strauss and Corbin, 1990) to compare a unit of data with others from the same category. Using constant comparisons resulted in descriptions of themes being constantly clarified and also in codes being refined. Furthermore, the use of constant comparison means that one piece of data (for example an interview of a DWR-based Intervention workshop) is compared with previous data, and not considered on its own: this enabled me to treat the data as a whole rather than fragmenting it (Lincoln and Guba, 1985).

Analysis of the data collected during the DWR-based Intervention was conducted in the following stages:

(i) As I had done in the exploratory study, I organised and conceptualised the data based on the structural elements of Engeström's (1987) triangular formation. The nature of the DWR-based Intervention meant that there was a steady stream of data (mirror data) coming into the study for interpretation and analysis as the Intervention sessions progressed. As such key themes and concerns were identified in existing data and then explored further in subsequent DWR-based sessions. This meant that as issues were raised by the participants the opportunity to address them in later intervention sessions was taken. Guided by the elements and concepts of activity theory I used my intuition to explore issues that arose in the Intervention sessions by raising these issues in questions formulated around the elements in activity theory. My reading of the text recorded (interviews, DWR-based sessions and focus group

interview) during the study involved interpretation, selection and labelling of data units (Lincoln and Guba, 1985). Data units were labelled according to the classifications offered by activity theory. As I amassed data units themes and patterns became identifiable in the data. This is a form of what Sarantakos, 2005, p.305 terms "latent coding". These data units, which were participant quotations are what Boyatzis (1998, p.63)refers to as "the most basic segment, or element, of raw data or information that can be accessed in a meaningful way regarding the phenomenon". The units of data I selected varied from a particpant's single sentence to a group of sentences where a single idea was articulated. My aim was to keep these quotations short enough so that the main point was articulated but not so short as to exclude any relevant details or context. Data units were disgarded on the basis of having no relevance to the research phenomenon. There were instances where the participants did not appear to understand my question or comment, and as such the resulting data units were extraneous or irrelevant and so disgarded as the aim of the study was to understand how the participants' construct their everyday reality.

(ii) I drew upon Engeström and Sannino's (2011) methodological framework in order to identify and analyse different types of discursive manifestations of contradictions in the data.

(iii) I identified the object of the lecturers' activity system. I tracked and analysed the changes in the object across the duration of the Intervention. This was achieved through careful readings of the transcripts. During this analysis activity theory enabled me to unearth tensions and contradictions in the lecturers' activity system. It facilitated a descriptive analysis of how transformational expansive learning takes place. However, as I had become extremely familiar with the data, I wanted a way to understand how the discourse that I found in the transcripts related to the structure of the setting from which it originated. I had three contexts to consider: the original context of the Business School where the intervention started, the new context created by the DWR-based Intervention and the context of the FDT School where I conducted the focus group. To further understand the relationship between the discourse produced and the social

institution where it was produced, I turned to Bernstein's (1996) classification and framing model. Guided by Daniels (2010c) I created a model of description for the settings by applying Bernstein's concepts of classification and framing.

(iv) While the subject of the activity system was identified using activity theory, it was through Bernstein's concepts of "voice" and "message" that I was able to analyse changes in subject position that occurred as a result of the DWR-based Intervention. As Engeström (2007c) notes the notion of agency is central to formative interventions, where subjects become "masters of their own lives". The use of Bernstein's concepts to extend the activity theory analysis facilitated a deeper analysis of the change in individual subjects, thus illuminating the development of agency as a result of the DWR-based Intervention.

As the study progressed, I observed that the DWR-based Intervention had unexpected effects in the wider context of ITWI. In order to capture the full impact of the DWR-based Intervention, I conducted individual interviews with an external expert and a project manager who become involved later in the study. These interviews were also analysed using activity theory. Since both of these individuals were interviewed after the conclusion of the DWR-based Intervention, I was able to use the analysis of their data to triangulate with data collected during the DWR-based Intervention sessions.

3.19 **Research Ethics**

This thesis reports on research that was carried out in an Institute of Technology in the Republic of Ireland. However, I have endeavoured to maximize the level of anonymity extended to the participants and to the Institute. Pseudonyms have been used for the participants and fictitious names have been used when referring to the Institute and its internal schools throughout the thesis. This study was carried out following the code of good practice in research as set out by the University of Bath. My ethics approval form is available in Appendix A. As a full-time member of staff at ITWI, my role as insider researcher has already been discussed 3.12. For ethical reasons it was necessary for me to obtain consent from the Institute's management to conduct this study at ITWI.

Managers can be considered gatekeepers, and, as such, Oliver (2003, p. 39) notes they should be informed of research as they may have to live with the daily consequences of the research and its effects on participants. This consent was obtained before the study began (see Appendix B). I also obtained consent from the head of each school in ITWI from which I interviewed participants (Appendix B).

It was also necessary to obtain informed consent from each participant. I created a form that adhered to the British Educational Research Association's ethics guidelines (B.E.R.A., 2004). Interviewees were guaranteed the opportunity to verify their comments when the transcripts were complete. They were assured of anonymity, confidentiality and that their privacy would be respected. The same protocol was used for the DWR-based Intervention sessions, and permission was sought to video record the sessions. All the participants had full knowledge of the researcher's role at all stages during the study. Each participant signed a copy of this form, a sample of which is available in Appendix C.

3.20 **Validity and reliability**

A key strength of DWR research is its in-built ability to provide reliability and validity checks with regard to the data collection. In qualitative research reliability is regarded as the match between what researchers record as data and what actually occurs in the natural setting under study (Cohen et al., 2011). The concept of validity relates to the credibility of the findings of a study (Merriam, 2009). Collection and analysis of the mirror data were the first steps in the process of assuring a valid study. The presentation of the mirror data in the first DWR-based Intervention session tested the validity of the account by the participants themselves. They were able to challenge my interpretation of the data, if necessary. As each session generated more mirror data for analysis and subsequent presentation at the next session, this iterative process provided a checking mechanism to ensure data validity. This in-built process of validity checking was supported by my own further efforts to ensure validity and reliability of the data collection.

For example, I checked any queries I had on transcripts of interviews with the interviewees to ensure their accuracy. Interviewees were invited to review transcripts, but none accepted. Drawing on Lincoln and Guba (1985), transcript samples from the video-recorded DWR-based sessions and the video-recorded focus group were checked by a second observer for accuracy. For the most part the second observer agreed with my interpretations, only occasionally requesting clarification. This was a valuable process that enabled me to articulate my interpretations of the data and also improve the credibility of the study. During data analysis I returned to the participants on numerous occasions to check my interpretation of their statements. My field notes were also shared with the participants to check the accuracy of my observations and to improve my comments. These constitute member checks, in which the researcher asks participants to comment on researcher interpretations to ascertain if they "are credible to the constructors of the original multiple realities" (Lincoln and Guba, 1985, p. 296).

The use of multiple data sources also served to improve the validity of the study (Creswell, 2007). Triangulation included the use of multiple data collection instruments in order to capture and report the essence of the study from more than one perspective. Triangulation of methods and of theories can address issues of credibility and validity, thus serving to enrich data analysis (Lincoln and Guba, 1985; Sarantakos, 2005). In this study the use of CHAT was complemented by aspects of Bernstein's code theory to provide a deeper analysis. Sarantakos (2005) categorises triangulation; for example: (i) method triangulation, where different methods are employed; (ii) time triangulation, where data can be collected at different times during a study; and (iii) sample triangulation, where two or more samples are used to establish causal relationships. Based on these categorisations I have used time and method triangulation because data were collected at different points throughout the study using various methods (interviews, DWR-based intervention sessions, focus group and observational data). Arguably, I also employed sample triangulation through the use of the focus group as a comparison for the group that was formed during the DWR-based Intervention.

In constructing the narrative analysis for this thesis, I introduced verbatim quotations from participants where relevant in order to emphasise or exemplify (Cohen et al., 2011) issues and concerns that arose for the participants. Particular quotations were selected based on their ability to deepen understanding of the participants' views and feelings on their engagement with the phenomenon under study. Since my aim in this thesis was to explore the lived experiences of the participant lecturers in the context of interest, verbatim quotations were also selected to convey the life experiences of the participants to the reader. In the thesis I accompany verbatim quotations with my own interpretative commentary, but the quotes help to clarify links between data, interpretation and conclusion for the reader, all of which are issues that fall within the concepts of credibility, validity and reliability. Although quotions were selected only after they were classified as data units falling within the categories or elements of activity theory the difficulty of keeping the quotations short enough to convey the main point and yet long enough so that the reader sees the point of employing the quotation (Gibbs, 2008) still arose. However, I endeavoured to achieve the fine balance between using verbatim quotations to enhance readability and maintaining scientific objectivity.

The DWR-based Intervention engaged the participants in an iterative and reflective process throughout a series of sessions. The collaborative nature of the process brought about a transformation in the lecturers' thinking; the participants' agency was developed. The validity of the study is reflected in the participants' development of a solution to the problems they identified in their engagement with Moodle at the beginning of the study. One of the strengths of using the DWR-based approach is that meanings, interpretations and intentions are drawn from the participants, who verify their understanding and interpretation through the facilitation process of the sessions. The study's validity is further reflected in the interest expressed by ITWI's higher management in the work of the Intervention. This attests to Engeström's (1999a) claim that the validity of DWR is decided by the viability, diffusion and multiplication of the new models in similar activity systems.

3.21 **Reflexivity**

The concept of reflexivity is a valued one, especially in qualitative research (Merriam, 1998). Reflexivity is the recognition that the researcher is undoubtedly a part of the social world that he or she is researching. Cohen et al. (2011) note that qualitative enquiry is not a neutral enquiry; researchers bring with them their own values, beliefs, biases and world views. They further suggest that researchers should disclose and acknowledge themselves in the research. Guided by this perspective, I have explained the reasons for my choices and decisions in the design and implementation of this study and have articulated from my personal perspective and experience of the process. Adherence to the epistemological assumptions of the constructivist paradigm meant that I remained mindful throughout the study that "research is a product of the values of researchers and cannot be independent of them" (Mertens, 2010, p. 16). The use of CHAT sensitised and influenced me throughout the study, as I became acutely aware of the mutual shaping of the individual and the social context. I have explained my perspective as an insider researcher 3.12. Consistent with Lincoln and Guba (1985, pp. 382-384), I kept a diary throughout the study to record day-to-day information such as appointments with participants and personal information including how my thinking was developing, decisions I arrived at and my feelings as the study progressed.

3.22 **Chapter summary**

This chapter covered a number of philosophical and methodological issues such as the ontological and epistemological positions underpinning the study and the methodological approach which I chose. I discussed how the study evolved by giving a detailed account of the exploratory work carried out and how I decided on conducting a DWR-based Intervention. I discussed how a DWR-based intervention methodology and its analysis enabled me to provide a rich description of transformations that took place in the participant lecturers' thinking and practice throughout the study. I noted how choosing a DWR-based intervention provided an in-built validity check with the use of mirror data which must be validated by the participants. I also noted how the iterative and reflective nature of DWR-based Intervention sessions facilitated the participants

in the process of data validation. My account noted my own role and responsibillities as an insider researcher and the demands of conducting a formative intervention in order to encompass knowledge of the research topic.

The next three chapters present an analysis of the data from the DWR-based Intervention sessions. Chapter four presents as analysis of the contradictions and ultimate transformations that emerged as a result of the DWR-based Intervention. Chapter five offers a deeper analysis of the DWR-based Intervention in conjunction with an analysis of the focus group, which draws on the work of Basil Bernstein. Finally, chapter six presents an analysis of the wider institutional impacts of the DWR-based Intervention.

4 Chapter four: Analysis 1 - The DWR-based Intervention in the Business School – a micro view

4.1 Introduction

This chapter presents an activity theory analysis of the data collected from the Business School during the formative DWR-based Intervention which took place between January and December 2010. These data were collected in the following ways:

(i) individual audio-recorded interviews carried out with the participant lecturers from the Business School

(ii) six video-recorded group sessions conducted with the participant lecturers

(iii) my observations and field notes created during the research period

In this chapter I consider my first research question (see section 3.11) and analyse the tensions and contradictions experienced by lecturers and the transformations that took place in the lecturers' activity system as a result of participating in the DWR-based Intervention. According to Daniels (2010b) tools are cultural historical products that shape thinking and feeling and are in turn shaped and transformed through their use in human activity. This chapter describes how this mutual transformation was observed in the cultural context of the Business School. For Engeström (1987) expansive learning is an example of a transformation in an activity system. I show how new forms of activity emerged as a result of a transformation in the lecturers' activity system. Transformations occur as a result of participant lecturers working through contradictions that surface during the DWR-based Intervention sessions. This process of resolving the emergent contradictions drives forward new forms of activity. Multiple objects are associated with these new forms of activity and are explained in this chapter. I begin by describing the activity system under study. Following this I present an analysis of the data collected from the individual interviews conducted before the six video-recorded DWR–based Intervention sessions, the results of which create the mirror data for the first Intervention

session. I then present an analysis of the data from the DWR-based Intervention sessions in order to uncover contradictions in the discourse. I draw on Engeström and Sannino's (2011) methodological framework to conduct this analysis, uncovering different types of discursive manifestations of contradictions. The final section describes the transformations in the object of the activity system during the course of the DWR-based Intervention.

The lecturers' activity system

An activity system is a model of the real-life environment of an individual or group of individuals. The lecturers' activity system is under scrutiny in this study. This activity system, as defined by its elements, is outlined in Figure 4.1 below:

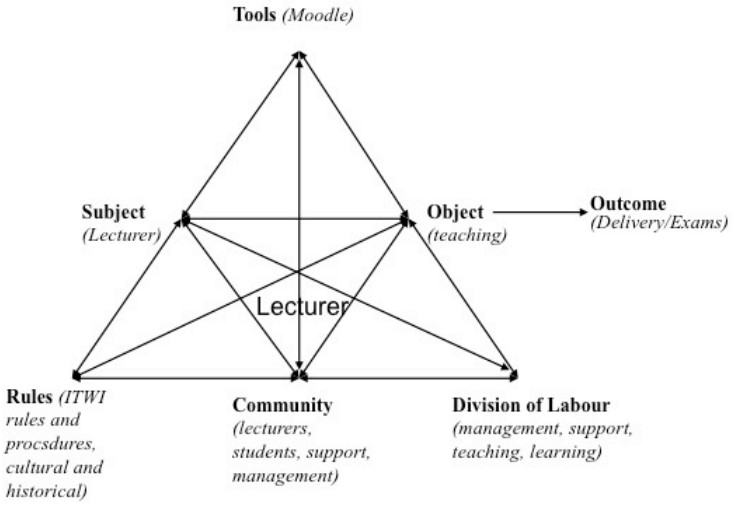

Figure 4.1: Lecturer activity system adapted from Engeström (1987)

4.2 Central issue – transformations

The analysis in this chapter focuses on understanding the transformation in the lecturers' activity system. DWR aims to furnish people with the instruments with which they can master a qualitative transformation of their activity system (Engeström, 1987). I follow and analyse the historical transformation of the participants in this study in their cultural context. These transformations are an

example of expansive learning (Engeström, 1987), which is a transformation in the object of an activity system. The object is not static or dead; it has self-movement. By tracking the self-movement of the object of the activity system, I can present evidence of a transformation in the lecturers' activity system. The formative intervention is the methodological tool that supports participants in gaining better agency (i.e., gaining a better grasp of their own future through expansive learning). Working with the participant lecturers over a period of 12 months, I observed how their discourse changed through time. By analysing that discourse I gained a more in-depth understanding of the relationship between cultural context and the lecturers' engagement with the tool Moodle. Vygotsky's mediational model is helpful for theorizing how social, cultural and historical forces all play a part in the transformations that lead to expansive learning.

The analysis of the cultural context (the Business School) began by examining the data collected from the individual interviews with the 12 participants.
I noted from a combination of the exploratory study and my own experience and observations as a full-time lecturer that the introduction of Moodle sparked some disturbance in the cultural context of the Business School. The exploratory study data suggested that lecturers believed that Moodle might be a changing force in their work practice and signalled a move towards a more technologically integrated pedagogic practice. This is consistent with the generally accepted view that new technologies will change the teaching and learning environment of the twenty-first century, as discussed in Part A of the literature review.

Transformations in participants and practices in an activity are studied by seeking out contradictions, tensions or disturbances by using mirror data from the activity system. These contradictions or problem areas drive change within the system. It is through deep analysis of these contradictions that resolutions can be found. The central assumption of activity theory is that development is driven through engagement with contradictions (Daniels, 2010a). By focusing on contradictions as dynamic forces of change, I attempted to track transformation within the lecturers' activity system. Tracking these contradictions enabled me to illustrate how the use of Moodle potentially led to a shift in the object of the

lecturer's activity which, in turn, led to shifts in other elements extending from the activity system. This demonstrates that the DWR-based Intervention had a positive impact on the evolution of the lecturers' activity system.

4.3 Analysis of mirror data

The initial interviews with the 12 participant lecturers generated data that were subsequently used as mirror data in the first session of the DWR-based Intervention. The activity theory checklist specified by Kaptelinin, Nardi and Macaulay (1999) was used to design the interview questions. This checklist reflects the principles of activity theory, as described in section 2.15.1. It provides a general framework that can be used to represent the relevant contextual factors, as specified by the components of the activity theory triangular formation (Engeström, 1987). The checklist, as refined by Duignan, Noble and Biddle (2006), was also drawn upon to further help in the formulation of interview questions. The questions were open-ended in order to encourage the respondent to develop a narrative around his/her use of Moodle. Questions probed the lecturer's views on the following issues: the use of Moodle as a teaching/learning tool; rules in the teaching environment; division of labour; motives for acting on objects; and the objectives of Moodle usage (see Appendix G for interview schedule). Each interview took approximately 20 minutes and was audio-recorded in full and transcribed. The aims of the individual interviews with the participants were to determine:

(i) the wider institutional setting of the activity system
(ii) the lecturer's role, and whether it was changing as a result of the introduction of Moodle
(iii) the level of engagement with Moodle
(iv) how Moodle mediates the lecturer's teaching environment
(v) the tensions and contradictions that arise

The analysis of the interviews was structured on a foundation of the elements of activity theory. Three major contradictions emerged from the data analysis:

(i) object and tool
(ii) subject and community

(iii) division of labour and tool

(i) Object and tool

Eight of the 12 lecturers interviewed said that they had used Moodle, but stressed that this was only at a basic level. They used Moodle mainly as a data repository for storing class notes and other materials designed for student access. As one lecturer remarked:

> **L7:** I just use it to put up notes for students, so far.
> (Individual interview, January 2010)

Irrespective of this characteristic statement, there was a strong feeling that the lecturers wanted to use Moodle in other ways to enhance their teaching. While they believed that Moodle had this potential, they did not understand how to unlock it. One lecturer stated:

> **L3:** […] there is loads of things on it that I would love to make use of, you know? I think I have to teach myself. I have to get a book or something.
> (Individual interview, January 2010)

However, the data also suggests that there was a consensus among the lecturers that Moodle was not being used to its full potential and that this was an issue which they needed to address; as the following lecturer commented:

> **L8:** I'm just using it at a basic level, the same as the others. Sure, not many people in Business are using it, really, but we will have to start getting better at it, won't we?
> (Individual interview, January 2010)

The four lecturers who had not used Moodle said that they had not done so yet but realised the importance of using it in the future. A contradiction arises here because the lecturers believe that Moodle has some potential to enhance their teaching environment and that they should be using it in a more advanced way, but collectively they seemed to be languishing in inertia.

(ii) Subject and community

All 12 lecturers indicated that they operated largely in isolation. It became very apparent that the lecturers saw their environment as highly individualistic.

When asked if they shared or interacted with others who taught on the same programme in relation to work issues, they answered emphatically that they viewed themselves as operating in a solitary capacity. The manner in which they spoke of the individual nature of their roles suggested that it was not something that enhanced their work environment. The following quotes illustrate this point:

> **L3:** I paddle my own canoe.
> **L7:** I am an island.
> **L2:** We don't have a culture of working together.
> **L4:** We don't connect as individuals, in the academic sense.
> **L5:** I do my own thing.
> **L9:** I try to solve the problems myself.
> **L10:** There is no real environment for staff to interact.
> (Individual interviews, January 2010)

The lecturers spoke of the individualistic nature of their work setting as if it were an ever-present and unchangeable fact of their working lives, for example: "we don't have a culture of working together". However, while they did not overly object to this individualistic environment, I sensed their frustration at how it inhibited their progress with Moodle. In activity theory terms a tension or contradiction arises here. On the one hand, the lecturers work in individualistic roles with what could be interpreted as a large degree of autonomy. On the other hand, the introduction of Moodle caused some disturbances as it required a collaborative effort in order for each individual lecturer to develop competency in its use. In other words, the lecturers believed that they would have to use Moodle, but they could not envision how this would happen as they felt that they were constrained in their individualistic environment in a way that was counter-productive to moving forward with the new tool. As one lecturer put it:

> **L2:** Moodle is open environment, open culture, but we don't have that here.
> (Individual interview, January 2010)

Here, L2 refers to the fact that Moodle is open source software but implies that the culture in the School is not conducive to learning to use Moodle.

(iii) Division of labour and tool

The interview data also suggested that the introduction of the tool (Moodle) impacted on the division of labour. Lecturers who used Moodle stated that it had increased their workload and also changed their relationship with their students.

> **L8:** My workload has increased with Moodle.
> (Individual interview, January 2010)

One lecturer spoke of the need to have class notes prepared up to five days in advance in order for the students to access them before classes. Some lecturers mentioned that they did less photocopying as students could now print material themselves from Moodle. They also felt that this gave the students more responsibility to ensure they had the relevant class notes. This suggests that the tool brought about some change in the division of labour. One lecturer commented:

> **L10:** Moodle has definitely changed how we work with students.
> (Individual interview, January 2010)

The ability to make class notes available on Moodle in advance was one feature of this change. There was a feeling among the lecturers that the arrival of new technology meant they had to reconsider how they did things, but they were uncertain about what this really meant, as is evidenced in the following statement:

> **L9:** I need to make my classes more engaging, but I don't know how to go about it, or, can Moodle help with that? I don't know.
> (Individual interview, January 2010)

In this example the lecturer expresses a need to change her delivery method but is uncertain if Moodle can help with this task. While lecturers did want to become more competent in the use of Moodle, they were unaware of any official ITWI policy or plan on the matter. They said there was no official pressure to use the tool, but they wanted to integrate it into their own work so as to be in line with twenty-first-century teaching practices.

In summary, the mirror data were generated from an activity theory analysis of the information gleaned from the individual interviews. They were subsequently

used to probe the participants further in the first session. The mirror data suggested that the lecturers worked in a highly individualistic setting, yet they were faced with mastering a new collaborative tool in their work environment. Lecturers believed there was a need to enhance their pedagogic practice through the use of Moodle, yet nobody had mastered the tool at an advanced level. This may be linked to the absence of any official ITWI policy on Moodle usage and the fact that the lecturers were not obliged to use the tool. Lecturers expressed a strong desire to improve their competency in Moodle, but they saw no support mechanism for this. They did not know how they could move forward, and this resulted in a great deal of frustration.

4.4 DWR-based Intervention sessions

Critical incidents, troubles and problems in the work practice are recorded and discussed at formative intervention sessions as *first stimuli* (Engeström and Sannino, 2010). The mirror data served as stimuli for the first of six DWR-based Intervention sessions. In the first session I presented the mirror data to the participants, both orally and in written format, and opened a discussion by asking their opinions on that data. I also wrote quotes from the interviews on "sticky notes" and placed them on the wall to provoke discussion during the session. The sessions varied in length from 90 to 135 minutes.

The first DWR-based Intervention session focused on the object of the lecturers' activity system, i.e., their pedagogic practice. I asked the participants probing questions that were formulated using the elements of Engeström's (1987) triangular formation. This facilitated in-depth discussions and negotiations which dominated the session. Towards the end of the session, the lecturers as a group concluded that they needed help to develop their competencies in the use of Moodle. They decided that an expert who was external to ITWI would best suit their needs. Therefore, I sourced an external expert (Matt) who agreed to attend the second DWR-based Intervention session. The lecturers engaged in further discussion and explored the potential of Moodle with Matt. At the end of that session, they asked Matt if he would partake in subsequent sessions and provide them with customised training. He agreed, and, as a result, sessions three, four

and five concentrated on the lecturers developing their competencies in Moodle. They worked collaboratively to learn the functions and features of Moodle, which they subsequently trialled in their own teaching practice and then shared the results with the rest of the group in subsequent sessions.

During session three the participants bonded strongly and identified themselves as a group. They named their group the "Moodle User Group" or the "MUGs" as they became known to themselves and also within the wider setting of the Business School. During session six, which was a reflection and discussion on the DWR-based Intervention process, the lecturers discussed how they would sustain the MUGs group and continue to work together to explore new ways of using both Moodle and other relevant technologies to enhance their teaching practice. I facilitated the participants by using the conceptual tools of activity theory to analyse the historical development, the current contradictions and the future potentials of the work practices during the DWR-based Intervention sessions. It was evident to me from the beginning that the lecturers' activity system was going through a period of disturbance or intensive change. The introduction of the tool (Moodle) signified a change in the pedagogic practice which, in turn, emerged in the form of tensions and contradictions in the existing activity system. In order to analyse how the participants worked on resolving the contradictions in their activity system, it was necessary first of all to identify those contradictions. I draw on Engeström and Sannino's (2011) methodological framework to identify and analyse discursive manifestations of the contradictions that emerged in the lecturers' activity system. The next section illustrates this analysis.

4.5 **Discursive manifestations of contradictions**

Contradictions are not visible initially; they are historical and systemic products which become manifest in discursive action and in patterns of talk. The only way we can identify and subsequently attempt to resolve contradictions is through their manifestations. Engeström and Sannino (2011) alert us to the methodological problems associated with directly identifying contradictions in discourse. They present a methodological framework for the identification and

analysis of four different types of discursive manifestations of contradictions, which this analysis draws upon. These manifestations are dilemmas, conflicts, critical conflicts and double binds. I conducted an analysis of the transcripts from the six DWR-based Intervention sessions using linguistic cues, as defined by Engeström and Sannino (2011), to identify discursive manifestations of contradictions. See Table 4.1 below:

Manifestation	Features	Linguistic cues
Double bind	Facing pressing and equally unacceptable alternatives in an activity system Resolution: practical transformation (going beyond words)	"we", "us", "we must", "we have to", pressing rhetorical questions, expressions of helplessness "let us do that", "we will make it"
Critical conflict	Facing contradictory motives in social interaction, feeling violated or guilty Resolution: finding new personal sense and negotiating a new meaning	Personal, emotional, moral accounts, narrative structure, vivid metaphors, "I now realize that [...]"
Conflict	Arguing, criticising Resolution: finding a compromise, submitting to authority or majority	"no", "I disagree", "this is not true", "yes", "this I can accept"
Dilemma	Expression or exchange of incompatible evaluations Resolution: denial, reformulation	"on the one hand […] on the other hand", "yes, but", "I didn't mean that", "I actually meant"

Table 4.1: Types of discursive manifestations of contradictions (Engeström and Sannino 2011)

4.6 Data Analysis – discursive manifestations of contradictions

In order to find possible dilemmas and conflicts in the corpus of discourse, I firstly searched the transcripts for occurrences of the word "but" (to identify a dilemma) and then for occurrences of the word "no" (to identify a conflict). I used the "find" function in MS Word to carry out this search. Engeström and Sannino (2011) also found this method of searching for rudimentary linguistic cues to be successful when using data from a Finnish elderly-home-care study conducted in 2009. Since the correspondence between the cues and the manifestations is probable rather than definite, I followed the search by a careful reading of the context of the words to confirm further or deny the possible manifestation. I secondly identified critical conflicts by a careful reading of the data. Then, I counted the personal narratives that were emotionally or morally charged. As Engeström and Sannino (2011) suggest, I found the participants became quite animated in articulating these narratives and often accompanied

them with vivid metaphors. To identify double binds I searched for occurrences of helplessness by looking for instances of the use of the plural form "we" and rhetorical questions. See Table 4.2 below for the results of this first step in the analysis.

DWR-based Intervention Session	Length (mins)	"But"	"No"	Narrative and metaphor	Rhetorical question
1	135	110	3	3	9
2	110	57	2	0	7
3	100	50	1	0	0
4	120	63	4	0	0
5	100	54	3	0	0
6	90	87	9	1	3

Table 4.2: Linguistic cues for potential manifestations of contradictions

A number of initial observations can be made on the basis of the data in Table 4.2. The occurrence of "but" expressions is quite frequent across all the sessions. The frequency of this potential-dilemma indicator is higher than any of the other indicators. This could imply not only the discursive analysis of a problematic situation but also a cultural norm of a lack or avoidance of conflict. The frequency of negative "no" is not high in the data corpus. In comparison to the frequency of "but" expressions, the incidence is very low overall, being highest in the final session. This suggests that the participants concurred on their dilemmas, thus reducing the incidence of conflict. Arguably, as all the participants were lecturers in the Business School, they were voicing their common dilemmas in their cultural context rather than conflicting with one another to any great extent.

The incidence of critical conflict is virtually non-existent in the data, except for the first and last sessions. This may be suggestive of a cultural norm where people are quite guarded and do not easily express emotion in the workplace. However, since sessions three, four and five were where the lecturers concentrated on developing their Moodle competencies, this result is not surprising. The incidence of double bind is similar to that of critical conflict, in that its frequency is generally low. It does appear in the first and second sessions, but it is not observed again until one occurrence in the final session. This may

indicate that the double binds emerging in the first session have to some extent been overcome or resolved by the end of the sessions as transformation occurs. The absence of double binds in the third, fourth and fifth sessions reflect the fact that the lecturers were focused on building Moodle skills during this time. These observations will be supported in the next section by a deeper analysis of the actual discursive manifestations of contradictions.

Session	Length (mins)	Dilemmas	Conflicts	Critical Conflicts	Double binds
1	135	10	2	3	1
2	110	2	0	0	1*
3	100	2	1	0	0
4	120	2	1	0	0
5	100	0	0	0	0
6	90	3	0	1	0
Total	655	18	4	4	1

Table 4.3: Discursive manifestations of contradictions

* The double bind identified in session 1 arose again here in session 2; hence, the total for double binds remains at 1.

4.6.1 Dilemmas

A comparison between Table 4.2 and Table 4.3 reveals that while the frequency of linguistic cues for potential dilemmas was particularly high, the number of actual manifestations of dilemmas was not as extreme as the rest of the manifestations. The relationship between both critical conflicts and double binds and their actual manifestations is quite different, presenting as a one-to-one correspondence in the case of critical conflicts. This is consistent with Engeström and Sannino's (2011) suggestion that dilemmas and conflicts are commonly associated with clustering of "but" and "no"; however, a one-to-one correspondence is not to be expected. They further comment that this clustering tendency is weak in rhetorical questions as cues for double binds. For example, in this data the number of double binds is closer to one third of what the cues initially suggested. I found the highest number of dilemmas in the first session. This is not surprising since the participants engaged in a very lively discussion analysing their situation in this session. As the sessions progressed the participants moved towards finding resolutions, with sessions three, four and five concentrating on the development of Moodle competencies. Unsurprisingly,

therefore, the number of dilemmas decreased accordingly. Their decision to concentrate on developing their competencies indicates a move towards action and resolution. The low occurrence of conflicts concurs with the initial observation made on the basis of cues, namely that the process was largely non-confrontational.

One dilemma which repeatedly arose was that the lecturers considered their students to be far more technologically advanced than themselves. They saw this as a difficulty in their work setting. The following excerpt demonstrates an example of this dilemma:

> **L10:** […] look at all the hours [the students] spend online, [they spend] more time on iPods [and] online than eating or sleeping. They are spending much more time interacting with each other on Facebook. They are putting up their own videos, being far more advanced, and then we are going in putting up PowerPoint, and they are looking at Moodle and… [*throws up hands in frustration*]
> **Researcher:** Does your own lack of knowledge make you feel isolated?
> **L10:** Not even so much isolated, but I feel ignorant, really.
> (Session one, March 2010)

L10's response suggests that she does not consider her current teaching method to be commensurate with her students' technological abilities. L10 talks of the students as "being far more advanced", suggesting her own perceived technological incompetence. The lecturers have historically seen themselves as experts in their subject areas; however, the introduction of Moodle brings about tensions as the lecturers are not experts in the use of Moodle, and this makes them feel uncomfortable in front of their students.

Another example of a dilemma that reoccurs throughout the data was that the lecturers felt that the Moodle training provided by ITWI did not satisfy their needs. This is demonstrated in the following excerpt:

> **L7:** You go to the training. It is two or three hours, and you are put through it, whereas a simple, maybe, one-pager and…or…if you are stuck, to talk to a colleague is much better. I mean, I did the training on Moodle, and I have to say I came back a few weeks later, and I

tried to do it, and I. Was. Stuck, and it's by asking a colleague – bingo, there it is.
Researcher: So the training doesn't fit?
L7: It doesn't do anything.
L1: But the focus of the training is introductory as well.
L7: Yes, and that's what I think.

(Session one, March 2010)

This excerpt suggests that the lecturers are not satisfied with the generic Moodle training provided by ITWI as they feel it does not provide the relevant level of meaningful training. The comment "you are put through it" from L7 suggests that the lecturers have no input or control over their own learning. Furthermore, L7's statement "it doesn't do anything" suggests that the training is ineffective from the lecturers' perspective. This sentiment was not disputed by any of the participants, and it resonates with findings from Salmon (2004), who argues that in-house ICT training courses are often not linked to the real teaching and learning contexts of academic staff.

4.6.2 Conflicts

Throughout the sessions the process was, for the most part, non-confrontational. In the first session and part of the second session, the lecturers seemed quite frustrated and annoyed by their dilemmas. While they were mostly in agreement, even though they expressed different perspectives on the dilemmas, one significant example of a conflict arose. During an exchange between two or more lecturers, one lecturer suggested that those who taught ICT modules (from within the Business School) could provide help for other lecturers with Moodle. Although this conflict was relatively short-lived, voices were raised, and I observed a lot of tension in the group at this point. In the context of the DWR-based Intervention, it was read as a criticism of the ICT lecturers (verified with participants after the session, March 2010). Engeström and Sannino (2011) note criticism as a conflict in their framework.

L8: It's you guys (*looking towards two ICT lecturers*) who can actually tell us what would make our lives more interesting or our students' lives…
L6: (*exasperated*) But, it's not…
L8: …because we don't know.

> **L6:** If we're relying on voluntarily getting it from the IT lecturers, you're basically saying that the Institute is not doing something.
> (Session one, March 2010)

An even more conflicting situation developed towards the end of the first session. This time the conflict arose from a disagreement on whether first year students were mature enough to engage in self-directed learning through a tool like Moodle. Again, the lecturers' voices were raised and their tones became aggressive. L8, an economics lecturer, asserted that first year students were not mature enough and still needed what she described as a "bit of parental control". L5, an ICT lecturer, refuted this by saying that students passing exams at the end of the year indicates that they can work on their own. The two lecturers had a heated and aggressive argument which was diffused in the following way:

> **L8:** You come in here and now bully us at the end. Look, [*in a strong aggressive tone*] *I* have them. [*Aggressively*] Are *you* teaching first years?
> **L5:** [*abruptly*] No, I'm not teaching them.
> **L8**: Well, *I* am teaching first years, so *I* want to just skip this discussion altogether. Now, if you're not teaching first years this year…I'm talking about this year, because the points were dropped, and we've doubled intake into first year. I am talking specifically about that group. You're not teaching them, I am [*angry and visibly annoyed, L8 moved as if to leave but then stayed*].
> (Session one, March 2010)

I noted that L8 was the one who had suggested earlier that the lecturers in ICT could help others to learn teaching technologies. L5, who refuted the claim about the first years, was a lecturer in the ICT subject area. Arguably, this lecturer was reacting to the earlier claim that the lecturers in ICT could possibly help the others as I observed that a tension had existed since that point in the session.

Interestingly, two more situations of conflict, which were similar to each other, arose in sessions three and four. In each case a lecturer who was not participating in the study tried to join a DWR-based session just as the session was about to begin. The following excerpt is the case from session three:

> **Researcher:** I'm afraid, Lynda, you can't partake in this session as this group is part of a research study that has been together since January.
> **Lynda:** *What*? Well, I just heard that there was Moodle stuff going on here. Kevin said it was good, and I want to learn more about Moodle. Is there a problem with that?
> **Researcher:** Well, I do have to ask you to leave as this group is part of a research study. It's not possible for people to join at this point, but there will be other sessions that you can join. I can talk to you about it later on.
> **Lynda:** Well, that's just ridiculous. If there is something going on in the department I don't see why it should be limited to certain people [*walking off, obviously not happy*].
>
> (Session three, June 2010)

In my field notes from October 2010, I noted that after session four, two of the participants engaged me in a discussion about the fact that a non-participating lecturer had tried to join the sessions. They made it clear to me that they felt it would not be beneficial or fair to include others in the sessions at this point, even though others in the School were aware of the sessions and wanted to join. The participants said that they wanted to keep MUGs to themselves as they felt they were making progress as a group and did not want any disruptions. This indicates how they identified the group as belonging to them, the participants, and were adamant that it should be kept that way. I noted that the lecturers wanted to keep MUGs as an insular group and were unwilling to accommodate new people.

4.6.3 Critical conflict

When a dilemma is consciously appropriated as a personal dilemma it can reach the quality of a critical conflict (Engeström and Sannino, 2011). In the following excerpt the lecturers talk about their own lack of technological know-how in comparison to that of their students, as was already raised as a dilemma by L10. However, I considered this excerpt to be a critical conflict because the lecturer (again L10) gave a strong personal narrative and was quite animated, showing a great deal of frustration in her articulation. Vasilyuk (1988) describes a critical conflict as "a situation of impossibility or unintelligibility": people face inner doubts that paralyse them in front of contradictory motives that are unsolvable by the subject alone. For example, this articulation demonstrates that there is

some fluidity between the different types of discursive manifestations of contradictions:

> **L10:** […] But the reality is that it took four years for us to get to the level we're at. We can't blame it on the training. I mean, a lot of it is us. I'm a 46-year-old. How I learn…I mean, when I look at my 16-year-old at home or my 21-year-old and what they can do at home with computers. I mean…I…[*exasperated*] or my 10-year-old. I mean, they are so far advanced, they have no inhibitions. They are on to websites and connecting, doing videos and sending stuff on to each other. I mean, I'm learning to put my notes up on Moodle and to do a click to connect to a YouTube [video], and click to an RTE player. I mean, I'm doing such basic stuff [*hands outstretched, eyes raised to heaven*].
>
> (Session one, March 2010)

L10 appeared extremely frustrated with her lack of technological competency. She states that "it took four years for us to get to the level we're at"; here, she is referring to the fact that Moodle had been available in ITWI for the previous four years. She personalises her dilemma by speaking of how she sees her children as more technologically advanced than her, which suggests that she views her students' technological ability as similar to that of her children, and this causes her great frustration. I note that she seems unable to resolve her difficulty on her own. A critical conflict also arose when the lecturers spoke repeatedly of their technological incompetence and of their reluctance to engage with Moodle. In the following extract, for example, L8 expresses the feeling of fear and how she thinks students may view lecturers because of their lack of knowledge of Moodle. L10 concurs and makes the point that expertise in her subject area may be jeopardised because of her lack of technological competence in Moodle.

> **L8:** That guy Galvin [*referring to a known Irish academic*] said it, and he made [the point] very strongly. We are not actually digital natives, and that's why we are reluctant to embrace that. So that's why we are saying we need to be shown what to do, [*pleadingly*] because we didn't grow up with the technology.
> **Researcher:** So, is that something that constrains you?
> **L8:** It is, yeah. But we have to recognise that we are scared of technology to a certain extent.
> **L10:** But, like, I'm putting my hand in the air saying I have *very*, *very* minimum knowledge of Moodle, so I would say I would not be as effective in their [the students'] eyes as somebody who is a whiz kid

> and absolutely fantastic but doesn't have a clue about management. You know what I mean? Like, lecturing in management is completely different.
>
> (Session one, March 2010)

Critical conflicts are noted by the expression of emotion and often a struggle within the individual. This can signify a primary contradiction as the critical conflict can be seen to reside in one element of Engeström's (1987) triangular formation of an activity system. In this case a primary contradiction is experienced as a personal struggle for the lecturer (the subject). They struggle between their role as expert in their own subject area and their lack of knowledge and skill in using the technology Moodle to deliver their lectures.

4.6.4 Double binds

Engeström and Sannino (2011) state that double binds are often expressed as helplessness. They often arise when people are faced with pressing and equally unacceptable alternatives in an activity system. It is important to note that in this thesis I further nuance Engeström's notion of a double bind with Bateson's (1973) idea, which Engeström (1987) acknowledges as another interpretation of a double bind. According to Engeström (1987, p. 165) a double bind is:

> a social, societally essential dilemma which cannot be resolved through separate individual actions alone – but in which joint co-operative actions can push a historically new form of activity into emergence.

For Bateson double binds are processes where actors repeatedly face pressing and equally unacceptable alternatives in their activity system, with seemingly no way out. The double bind I noted arose in both the first and second sessions in relation to the lecturers' own belief in their need to enhance their teaching practice with Moodle and other technologies. The two unacceptable alternatives are: (i) the lecturers are unable to advance their own knowledge owing to their individualistic work environment, and (ii) the lecturers believe that the Moodle training provided by ITWI does not meet their needs. This resulted in a sense of helplessness and inertia about their position. Even though Moodle had been available in their work setting for the previous four years, the lecturers felt that

they had still not mastered it. In the first DWR-based Intervention session, I facilitated the lecturers in moving towards a resolution of their contradictory situation. The following excerpt is an example of the response from the participants:

> **Researcher:** Is there anything we could do better?
> **L2:** No, because we don't have the interaction.
> **L8:** Maybe we need a little staffroom. Back to the old bugbear again, that every day we go for coffee from 10 to 11 to 10 past 11, but we are flogging a dead horse there – there is no staff facility. There is a classroom, but there has to be a place we're guaranteed, but I shouldn't go down [that road] [*sighs in exasperation*]...because I've given up, actually. I've been beaten; there will not be a staffroom while I'm still here. That's basically what you need […].
> **L10:** I suppose what you're saying is that when we did have some sort of structure it was a very informal situation, and people actually, you know, you sat with the engineering group and you talked about different things, and stuff was discussed on a very informal basis, and people were learning a lot more without the formal structures of information coming to you through emails. We were actually learning a lot more from each other by sitting with the engineering group or the science group just having a cup of coffee.
> **Researcher:** And do you think this will happen anymore?
> **L10:** [*Hopelessly*] No, it's gone.
> **All:** [*Eventually*] No, no.
>
> (Session one, March 2010)

In this example L10 expresses a historical perspective by stating, "when we did have some sort of structure", indicating that the situation was different at a previous time. The lecturers' reference to a time when they felt they had more contact with each other—"we were actually learning a lot more from each other"— indicates that they did not always have such a strongly individualistic work environment. At this point I observed that the lecturers were quiet, as if reflecting, and then, in unison, expressed that "no", they would not have this opportunity again. This is suggestive of resignation in that they saw themselves as helpless in getting a space to meet and interact with each other; as L8 put it, "we are flogging a dead horse". This is consistent with Engeström and Sannino's (2011) observation that an expression of helplessness indicates a double bind.

Another facet of this double bind that arose a number of times was that the lecturers' realised the necessity of moving forward with the technology in their individualistic environment but once again felt that there was a lack of support and know-how from ITWI. The following excerpt illustrates this:

> **L3:** […] I think there is no plan at programme level. There is no plan for first years; we just take those six lectures and take them up to Christmas. So, as a result, you have some people who are very into Moodle, some who aren't, and I think if I can look at it from a student's point of view, they have six people who are responsible for their teaching and some of them are very much into the IT thing and some of them aren't. It's a *very*, *very* mixed message for the student. So that rolls on in to second, third and fourth level and even on to the Masters, where some people are using Moodle and some aren't. So, to be honest, I don't ever see how it can become more effective until there is some sort of collaborative agreement on what's going to happen. People just *need* to come together and say *this* is the approach we are going to take to year one or semester one or whatever it happens to be. I've seen, people do get fixated with issues which are sort of linked with this, but they are different in that we go on about attendance and stuff. Students who don't [attend] are still performing quite well, do you know, in that they are getting 40, and we can get over-fixated on it. And again back to this mind shift idea; the students' minds have changed by the time they get here and for many of us, for 101 reasons, we continue to approach the work in the same way, and I think in the absence of some sort of a plan…well, what can we do [*shrugs*]?
>
> (Session one, March 2010)

L3 sees the absence of an official plan as hindering any sort of development or progression for the lecturers. He suggests that a "collaborative agreement" was required on how the lecturers would, for example, use Moodle with the first year students. L3 also states that people get fixated on issues like attendance. I observed that L3 appeared frustrated in his belief that people continued to approach work in the same way because of a lack of a coherent plan. The question at the end was rhetorical as the lecturer shrugged his shoulders, indicating a level of both frustration and resignation. Later in the session I took up the issue of the need for a plan as, in activity theory terms, it indicates a division of labour issue.

Researcher: And, if we need a plan, whose responsibility is it to put a plan in place?
L4: […] I think Cian hit at it there. What we need is a plan and a structure.
Researcher: But whose responsibility is it to put a plan in place? That's a job of work. Can we do that in Business?
L3: Well, again, I think absolutely.
Researcher: But how would you go about it?
L3: It comes from the factory floor; it's communities of practice—a group of people just get their heads together and say we are going to make this happen. I don't think it will come from the management layer. I don't think it will come from the Institute layer. It won't come from the School. It won't come from the Department. And, even if it did come from one of those, I don't think *we* as a staff would do it. It needs to come from the floor.
L8: But, does the plan not come from the strategic level, really?
L3: It will never get done. It just won't be in place, though. [*emphatically*] It will happen if we *want* it to happen.

(Session one, March 2010)

This excerpt suggests that the lecturers believe that they do need a plan, but I observed that they began to realise that they would not move forward if they did not take action themselves. Again, this is consistent with Bateson's (1973) concept of double binds where actors often face unacceptable alternatives. In this case the two alternatives are: (i) continuing to teach with a low level of competency in using Moodle, or (ii) looking to an unsupportive individualistic environment for help. This gives lecturers the urge to act because both alternatives are seen as unacceptable. L3 asserts that the only way to move forward with the technology is for the lecturers to act themselves. I observed a belief that ITWI will not resolve the lecturers' situation; as L3 comments, "it will happen if we *want* it to happen". I observed that a sense of urgency and a strong desire to act had emerged, which, as Engeström and Sannino (2011) suggest, indicates a double bind.

The lecturers want to explore Moodle in order to overcome their ignorance and to determine if it has any practical application for their own work, as the following illustrates:

L2: I think the other weakness that we have as well is we are maybe not fully aware. Like, if we talk about using Moodle at four different

levels. We are not fully aware of what level three or level four is, and we need to look at someone outside the college who is using it at level three or level four, if you want to call it that, and see what they're doing […].
L1: So, where? We don't even know what the ceiling is in terms of those levels that we talk about, or what you could actually do with Moodle, and we will never go up the elevator until we find out what's on those floors.
Researcher: So, how do we find out, Kieran?
L1: Well, that's the problem that is still core and that we haven't answered yet.

(Session one, March 2010)

This illustrates the facet of the double bind under discussion in this section. According to Engeström and Sannino (2011) a double bind often implies a critical conflict. As the excerpt above illustrates, the lecturers maintain a sense of helplessness throughout, but there is also evidence of an emerging move towards a collective envisioning of the need for action, as indicated by the use of the word "we" and the suggestion to seek the help of an external resource. This was the point at which the lecturers moved to resolve their own situation, the point at which they realised they needed to press the button for the elevator. This accords with Engeström (1987, p. 16), who asserts that "joint co-operative actions can push a historically new form of activity into emergence", thus finding a solution to a double bind.

I observed that while there was helplessness within the group there was also an underlying appetite to avail of the potential of Moodle. This came to the fore through the dialogic process of the DWR-based Intervention. This double bind is closely related to a recurring theme that was noted earlier in the emerging dilemmas. The theme was the fact that the lecturers felt their performance was restricted, firstly by their own lack of technological expertise, and secondly by the inappropriate training provided by ITWI. While I initially recorded these issues as dilemmas, by the end of session one I recorded them as part of the double bind. As the participants discussed their situation, what was originally expressed as a dilemma moved to a critical conflict and was further reformulated as a double bind. This follows Engeström and Sannino (2011), who suggest that

transitions from dilemmas and conflicts to critical conflicts and double binds can lead to the articulation of contradictions that the participants are facing.

In summary, the number of dilemmas was highest in session one, but this number decreased significantly by the final session. When this is the case it implies that the contradictions in the activity system under study are quite mature and possibly aggravated (Engeström and Sannino, 2011). This is what allows them to be accessed at the beginning of an intervention. The double bind emerged in the first Intervention session and comprised a number of issues:

(i) Lecturers operate in a highly individualistic environment, but they see a need to collaborate with, and learn from, one another.

(ii) Lecturers want to use technology to enhance their pedagogic practice in a manner which they see as appropriate for the twenty-first century. Yet, after four years, they have not moved beyond a basic level of Moodle usage.

(iii) Lecturers want training in Moodle, but they do not engage with the training provided by ITWI.

The double bind highlighted secondary contradictions (contradictions between elements in Engeström's (1987) triangular formation). In activity theory terms these contradictions arose between the subject and the community, the subject and the tool (Moodle) and also between the subject and the division of labour. The use of Engeström and Sannino's (2011) proposed methodological framework to identify and analyse discursive manifestations of contradictions was successful in illuminating the contradictions in the data corpus. The next stage in the analysis was to observe how the participants attempted to resolve these contradictions throughout the time frame of the study. To do this I used second-generation activity theory to observe the expansion of the object of the activity system during the DWR-based Intervention. This is the subject of discussion in the next section.

4.7 From contradictions to moving object

The secondary contradictions highlighted in the previous section are brought about by changes in the object of the activity. The object of an activity system is its motive. The object is driven by the motivation of the subject (the lecturer). The object of the activity system is extremely difficult to pin down as it shifts dynamically while being acted upon. Engeström (1999b) asserts that the object determines the horizon of goals and actions in an activity system, but it is truly a horizon itself in that once an intermediate goal is reached the object escapes and it must be reconstructed with new intermediate goals and actions. In this study, the original object of the lecturers' activity system was to teach modules successfully, but the presence of Moodle changed that, and the lectures became focused on developing technological competency. Activity theory serves as a tool for mapping contradictions, and, when combined with formative interventions, it enables the practitioners to find ways of solving those contradictions which become the driving force of transformation. The examination of transformation is facilitated by the investigation of how contradictions are approached and resolved (Murphy and Rodriquez-Manzanares, 2008). Figure 4.2 below illustrates the transformation in the object of the lecturers' activity system throughout the DWR-based Intervention.

Tracking changes in the object of the activity system –January to December 2010

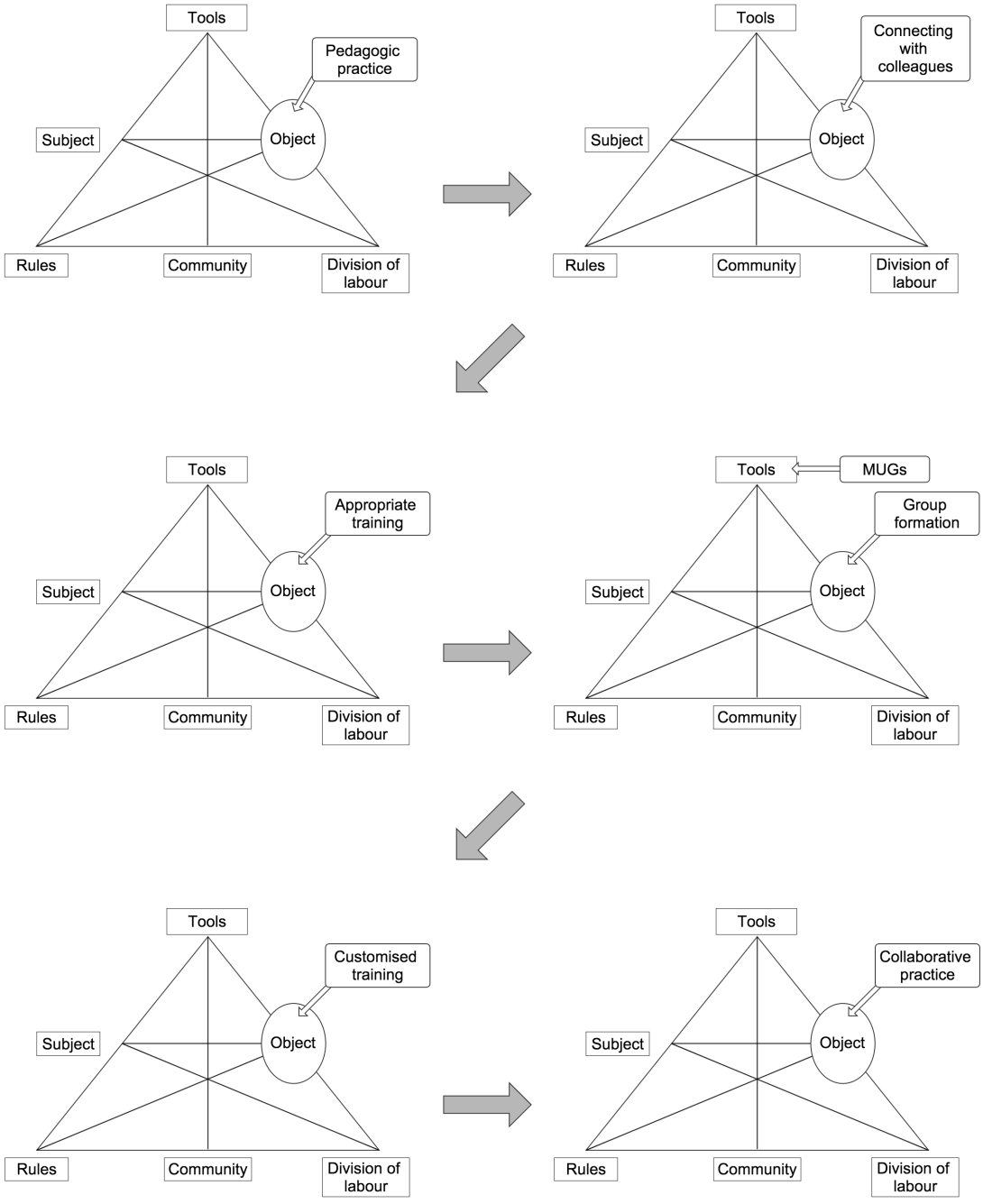

Figure 4.2: Changes in the object of the lecturers' activity system throughout the DWR-based Intervention sessions

4.8 Multiple objects

A line of development can be traced throughout the DWR-based Intervention sessions. Evidence of contradictions emerged quickly in the first session. The primary contradiction was that the lecturers were eager to develop a technologically enabled pedagogic practice as appropriate for the twenty-first century, but they were frustrated by their own inertia and their belief that ITWI did not provide sufficient support to enable them to do so. They also saw their highly individualistic work environment as a further inhibitor as they came to realise that collaboration is the primary means through which they can advance their knowledge. It was by resolving these contradictions that the lecturers expanded and further determined the object. The development of the activity took place as contradictions rose to the surface and were debated, negotiated and finally resolved during the period of the DWR-based Intervention. For Engeström (1987) this type of learning, i.e., that which is based on collective transformation, experimentation and design of new activities with the help of the analysis of their contradictions, is called expansive learning. My analysis, like others' (Foot, 2002; Puonti, 2004; Kaptelinin, 2005), demonstrates how the object of an activity can be difficult to catch as the participants moved through multiple objects. My analysis suggests the following changes in the participants' focus as I traced indications of change and potential expansions in the object of the lecturers' activity system. This plays out in multiple objects:

(i) pedagogic practice
(ii) connecting with colleagues
(iii) appropriate training
(iv) group formation
(v) customised training
(vi) collaborative practice

I will elaborate on each of these objects in the following sections.

4.8.1 Pedagogic practice

At the beginning of this DWR-based Intervention, there was a sense that the lecturers were in an unclear situation with regard to mastering the use of Moodle in their teaching environment. This accords with Engeström (1987), who talks of "grey areas" or a "no man's land" which are created because of the increasing

complexity of work processes where no one quite masters the work activity. At the beginning of the first session, I noted that the object was the lecturers' pedagogic practice. As they discussed their difficulties with their pedagogic practice, a primary contradiction arose: the lecturers want to deliver their modules and also engage their students, but they experience difficulties in doing this. As one lecturer opines:

> **L3:** I don't think it's what we teach at all, it's more how we do it, and I think this is really the focus of what we're trying to do here, and how we could do it differently.
>
> (Session one, March 2010)

This lecturer believes that his own and the other lecturers' current pedagogic practice is not entirely appropriate for engaging the twenty-first-century students. I observed that no other lecturer refuted his statement. This suggests the lecturers believe that their traditional pedagogic practice is flawed, even without the consideration of Moodle. The lecturers' discussion of the historical nature of their activity is necessary in order for them to consider the activity's future development. This accords with activity theory's principle of historicity (Engeström, 1999c): a tertiary contradiction arises between the old and the new conception of what constitutes appropriate delivery of course modules.
The following excerpts illustrate the lecturers' views on this issue:

> **L 4**: I think students want to be engaged with it, you know? They want to engage with the technology rather than being dormant receivers of knowledge.
>
> **L 8:** […] what's needed [is] less text, more interactive stuff, more short clips. […] they are bored out of their brains listening to me for an hour.
>
> (Session one, March 2010)

It is evident from these excerpts that the discussion on Moodle facilitated the lecturers' re-evaluation of their relationship to knowledge and how they could deliver this knowledge to their students. The object of the activity system is changing and expanding as the lecturers envision the outcome of their activity differently—they aim to move from transmission pedagogy to a more interactive format. For example, L4 speaks of students wanting to "engage with the

technology", and L8 uses the word "interactive" in relation to the pedagogic practice. The lecturers are suggesting a move away from their established norms of practice, which Engeström (1999c) suggests can signify a deliberate change effort.

The object for the lecturers is to cover course content and develop students' understanding of the material. However, the introduction of Moodle (tool) highlights a contradiction because the lectures do not have the technical knowledge to use the tool as an enabler of learning. In activity theory terms this is a subject - tool contradiction. The lecturers need to learn how to use the tool in different ways. The following excerpts show the lecturers' difficulties with the technology:

> **L10:** […] we are saying we need to be shown what to do, [*pleadingly*] because we didn't grow up with the technology.
> **L8:** It is yeah, and we have to recognise that we are scared of technology to a certain extent.
> **L7:** […] I'm at a basic level myself. I can't do anything. I'm just stuck, and I just feel that I'm limited, whereas I'm sure there are more avenues or it's more user-friendly than I can see.
>
> (Session two, March 2010)

This is an example of a shift in the object of the activity as the lecturers become concerned about the need to develop their own technical skills. While the lecturers are aware of the necessity for change, they are unsure how to implement this change. Moodle disrupted the lecturers' pedagogic practice in that it demanded that they gain a new expertise. I observed a shift in the object as the lecturers became concerned with developing their own technological skills: the subject (the lecturer) becomes the object (developing Moodle skills). Lecturers are not sure of how they should be acting on the object. This indicates a subject - object contradiction. In session one (March 2010) the lecturers were rethinking their pedagogic practice, which highlights the subject - object contradiction, as the following excerpt illustrates:

> **L4:** […] I think this sort of incremental change in mind shift is necessary, and I have to say that I like the idea of an overall approach to be used with first years which would be different to

> second, different to third and at the honours level, the overall sort of teaching approach. But to me that's what it is, it's sort of, ah, an agreement on an approach that will be used, not people paddling their own canoes.
>
> (Session one, March 2010)

L4 appears to be searching for a new approach to his pedagogic practice, hinting at the need for a collective approach rather than something individualistic.

4.8.2 Connecting with colleagues

When the lecturers moved the discussion to considering how they would gain competence in the use of Moodle, a contradiction emerged between the lecturer and the community. The object then became the need for collaboration as a reaction to the individualistic nature of their setting. The lecturers believed that collaboration would help them to learn to use the tool in their practice. The following excerpt illustrates how they felt inhibited by the individualistic nature of their work setting:

> **L 3:** I'd love to know what you're doing, what you're doing [*pointing to different participants*]. I mean, even at an elementary level, and let others know what I'm doing.
> **Researcher:** But, why don't you know that?
> **L 3:** Well, we don't talk to one another.
> **L 10:** We don't have an informal situation [in which] to meet.
> **L 4:** I think, as a community, we're very loosely coupled. We're normally *very*, *very* loosely coupled. We bump into one another in the corridor. We have anecdotal chats, and for us to develop Moodle as a community, *that* goes against it. We *need* to be coupled.
>
> (Session one, March 2010)

I noted a further shift in the object to the subject (the lecturer) when the lecturers discussed the fact that they did not have a designated space to meet and interact with one another. In section 4.6.4, when discussing double binds, I noted that the lecturers referred to an earlier time when they had "some sort of structure. It was a very informal situation", and they reflected on how at a previous time they "talked about different things". This suggests that their community became more individualistic over time. This contrasts strongly with how they talk about their community today. For example, L4 stated, "well, we don't talk to one another", and L1 added that, "we don't have an informal

situation [in which] to meet". The individualistic nature of the lecturers' community was contradictory to their needs. They needed to connect with each other in order to move forward. L4 stated emphatically: "I'd love to know what you're doing, what you're doing [*pointing to different participants*]. I mean, even at an elementary level, and let others know what I'm doing". I noted the lecturers concern about the adverse effects of their highly individualistic work setting, especially as they referred to an earlier time when they did collaborate and learn from each other.

4.8.3 Appropriate training

A further contradiction arose between the lecturer and the community, more specifically the IT training support at ITWI. I noted a change in the object when the discussion moved to how the lecturers would gain competence in the tool (Moodle). They talked of how the training provided by ITWI did not meet their needs. The following excerpt highlights these contradictions:

> **L 7:** You go to the training. It is two or three hours, and you are put through it, whereas a simple, maybe, one-pager and…or…if you are stuck, to talk to a colleague is much better.
> **Researcher:** So, the training doesn't fit, is that correct?
> **L 9:** It doesn't do anything
> **L 2:** I suppose […] the training is very generic, and that it possibly won't deal with the questions that I need answered.
>
> (Session two, April 2010)

The object became focused on how to gain appropriate training. This excerpt suggests that the lecturers did not place great value on the Moodle training that was provided by ITWI, although it emerged that four of the 12 participants had not attended any of the Moodle training sessions provided. I noted a general belief among the participants that the training was too generic and not helpful for their individual problems. As the DWR-based Intervention progressed, the focus of the object moved from the inappropriate level of in-house training to the pressing need to find appropriate Moodle training. When I asked their opinions on solutions to the training problem (in activity theory terms, this is a division of labour question), the lecturers responded:

> **L 3:** It comes from the factory floor; it's communities of practice—a group of people just get their heads together and say we are going to make this happen. I don't think it will come from the management layer. I don't think it will come from the Institute layer. It won't come from the School. It won't come from the Department. And, even if it did come from one of those, I don't think *we* as a staff would do it. It needs to come from the floor.
> **L 8:** But, does the plan not come from the strategic level, really?
> **L 3:** It will never get done. It just won't be in place, though. [*emphatically*] It will happen if we *want* it to happen.
>
> (Session one, March, 2010)

As the excerpt above shows, L3 believed that the lecturers needed to act themselves to find a solution. This belief was not disputed, and the group decided that they wanted an expert from outside ITWI to help them to progress with Moodle. This raises a contradiction between the subject (lecturer) and the division of labour. The provision of Moodle training was a task that belonged to the Computer Services Department at ITWI, but the participant lecturers decided they would find their own training. Reconstituting this in activity theory terms, the subject became the object as the lecturers focused on themselves and the means through which they could improve their Moodle skills. The subject became the object as a result of the introduction of a new tool. The quote below demonstrates this notion.

> **L 2:** I think you need to see it used in another college but in the same discipline, because we can relate to Business [*referring to the fact that they are in the Business School*].
>
> (Session one, March 2010)

I noted that the lecturers specifically wanted to source an external expert in Moodle who had lecturing experience, preferably in the business discipline. They felt that such an individual would have a better understanding of their needs as opposed to somebody who had expertise in Moodle but not in teaching. Matt, whom I mentioned earlier, fitted this profile. He was invited to join the group for the second session.

The focus of the object changed again when Matt joined the second DWR-based Intervention session. The lecturers questioned Matt on his knowledge of the practice with Moodle in other institutes. It seemed that they wanted to validate

their own position by finding out about the pedagogic practice of their counterparts. I noted how the focus shifted again to Moodle's potential to enhance the lecturers' teaching practice. Towards the end of the second session, the lecturers took responsibility for their own Moodle training. They asked Matt for his help to learn Moodle in an efficient way. This is a shift in the division of labour because the lecturers took responsibility for organising their own training, as the following quotes illustrate:

> **L 1:** And can you come here [to ITWI] and show us how to do some of these things with Moodle? That's a lot of our problem, too. We don't have any good practical training in using the technology.
> **L 7:** Yes, for us, it's finding out how to use Moodle efficiently.
> (Session two, April 2010)

I observed that Matt appeared to show a personal understanding of the lecturers' concerns, which had a positive impact on the participants, as the following comment recorded in my field notes after the session shows:

> **L10:** [*to the researcher*]
> You know that session with Matt was excellent. He really gave us hope. It doesn't seem so daunting now. If we just take one bit at a time, as he said, we will improve. I really found that helpful, and, you know, we are all in the same boat. It's great to have someone that understands where you are coming from.
> (Field notes, April 2010)

The initiative shown by the lecturers is an example of subject agency, which is central to formative Interventions (Engeström, 2007c). The lecturers are becoming "masters of their own lives" (Engeström, 2007c) There was a shift in the group dynamic towards the end of the second session (April 2010). The lecturers seemed to be much less frustrated than in the first session and much more positive and at ease as they began to understand the possibilities of Moodle. I asked the lecturers what was preventing them from using Moodle in the way Matt had explained. The replies illustrated a change in their thinking:

> **L10:** Well, not knowing that these things are possible, really, and the environment here…nobody here is using it like this, that I know of anyway.

L9: Yes, I just didn't know that you could actually do these things with Moodle.
L8: Nothing now…that I know these things are possible**.**

(Session two, April 2010)

4.8.4 Group formation

I noted towards the end of the third session that a collegial bond was being established between the lecturers and that they were developing a positive attitude towards Moodle and collaboration. I observed that the participants began to view the DWR-based Intervention sessions as a support mechanism. For example, they named themselves MUGs and within the Business School were seen as having competency in the use of Moodle. I recorded the sentiment that built in the group in my field notes in June 2010 as follows:

L9: [*to the researcher,*]
I was really busy on Wednesday, but I just dropped everything to attend the session because I wanted to end the academic year on a positive note. You know, being part of MUGs has given me something really positive in my work environment. It's great, and I'm learning so much.

(Field notes, June 2010)

L9's comments indicate that for her the DWR-based Intervention was a positive experience and that being part of the group had provided more than just developing Moodle competencies, it had also created a social connection. Lompscher (1999) asserts that objects become emotionally significant for an individual when the individual represents them cognitively and they satisfy a need for that individual. Thus, objects can become the real motive for goal directed, object-oriented activity. As such, L9's motivation for attending the session was two-fold: to be part of the group and to learn to use Moodle.

Similarly, another participant lecturer asked me if I would continue the sessions in the new academic year as she felt she was really progressing with Moodle and liked being part of the MUGs group. I observed that the lecturers were motivated and empowered by the control they had taken over their own training in the use of Moodle, which they believed enabled them to enhance their pedagogic

practice. For example, L7, who remarked that she felt "stuck" at the beginning of the Intervention, commented as follows at the end of session three:

> **L7:** I feel as if I'm learning something here. It's not that bad when you start getting into it. I can see how it would make my life easier [*referring to Moodle*].
>
> (Session three, May 2010)

I noted how other lecturers in sessions three, four and five shared the same feeling. Two of the participants remarked after session four (October 2010) that they had arranged to meet informally to discuss ideas they gleaned from the sessions. One of these participants was L3 who, in the first session, remarked that he would like to know more about how his colleagues worked so that he could learn from them. This suggests that the participants were bonding with each other and meeting outside of the sessions for further collaboration on Moodle.

I also observed that the participants developed a new interest in other teaching technologies beyond Moodle. In October 2010, five of the MUGs group attended a national teaching-technologies conference. This further demonstrates the emerging bonds between the participants and their developing interest in teaching technologies. The object had broadened from developing Moodle competency to gaining knowledge about other teaching technologies. I also noted that while the lecturers initially saw the MUGs as a mechanism to develop their Moodle skills, it was evident that the group became a tool; in activity theory terms it became an instrument which the lecturers used to mediate their individualistic work environment.

4.8.5 Customised training

By the end of the second session, it was evident that lecturers were intent on taking responsibility for their own Moodle training. They decided to work with Matt, the external expert. Three months after the research began, the data show that the focus of the third (June 2010), fourth (September 2010) and fifth (October 2010) sessions was the development of Moodle competency. In activity theory terms the tool had become the object at this point as the lecturers focused

on their learning and application of Moodle's technical features. They learned how to create and run quizzes, forums and chats and to set up groups, etc. Some tried out these features in their classes and reported their experiences to the MUGs group. This signifies a shift in the division of labour of the lecturers' activity system where different lecturers undertook to learn different features of Moodle and report back to the group. By session six the lecturers' concerns with the individualistic nature of their environment, appropriate pedagogic practice and their subject position were no longer foregrounded in their discourse. Learning the features of Moodle became the object of these sessions, which were tailored to their specific needs. The participants themselves took control of the content, direction and pace of their learning. For example, they wanted to learn how to use Moodle to run quizzes with large student groups. The following excerpt illustrates how they worked together to achieve this:

> **L8:** I've got a quiz here for one of my modules. Would it be okay to have a look at it as a group? We can use it as a sample, if people are okay with that? There are a few specific things I need to find out about quizzes before I run it with the students.
>
> (Session four, September 2010)

I noted that the group began to learn from each other after session three. For example, L8 worked a lot on developing a Moodle quiz, which she conducted with a group of 200 students after session four. She reported her experience to the group and this prompted discussion and communal learning of that feature. This is expansive learning: learning for a future form of activity and looking for new knowledge. During the Intervention the lecturers, through their collaborative work, created a new context for their learning, namely the group MUGs. It can be argued that the formation of MUGs was a resolution to the double bind that arose in the first session. This aligns with Engeström and Sannino's (2010) definition of expansive learning, in which the focus is on learning processes during which the subject of learning is transformed from isolated individuals to collectives and networks.

4.8.6 Collaborative practice

In the final session I noted that the participants had become a strong cohesive unit. Movement and transformation of the object had taken place throughout the Intervention. Lecturers believed that it was important to keep the group (MUGs) together as it had served them in transforming the object of their activity throughout the Intervention. As L1 remarked:

> **L1:** Yes, being part of the group has actually, I think, given me confidence. That's what I didn't have 12 months ago—to have the confidence to set up a quiz, to look at other aspects. Like, there's loads of other things I want to do with the Audacity (referring to other software), and I want to look at presentations, and I want to look at more YouTube-type presentations rather than physical in-class presentations. Again, that's something that's come out. So, I think the main thing is being part of a group like this, where we're all in it together, we're all at a certain level, but it's just given us confidence, particularly if you feel that you're not really an IT type of person, but yet you want to embrace the technology.
>
> (Session six, December 2010)

I noted that L4's echoing of this sentiment captured how the lecturers viewed their participation in the Intervention:

> **L4:** I think a significant momentum has been built up because of the project that you're doing [*referring to the researcher and this research study*], right, and it would be a shame for it to stop because even this actually goes beyond Moodle. I know Moodle could become the support, but there's so many new technologies coming on all the time, like Audacity and Turnitin [that] I experimented with here with this group this year.
>
> (Session six, December 2010)

During the final session (December 2010) lecturers also spoke of their desire to keep the MUGs together and to continue to learn other technologies. This shows how they viewed the group as a support network. The MUGs activity system contains zones of proximal development where an individual makes progress with the help of another (Vygotsky, 1978). The following quote illustrates this:

> **L8:** […] I might have been first to do the online quizzes, but now, as I say, Emma is the Queen of the Quiz because she has shown me other ways to improve your setting up the quiz, so it's not that one person

> becomes the expert and teaches everybody. We all have our own experiences. So one might be ahead for a week and then somebody else will find another item that will make life easier, and show each other.

This shows how one lecturer progressed in her learning with the support of another. It accords with Vygotsky's concept of the ZPD where an individual's potential is revealed when he has support from, or interaction with, others. Engeström (1987, p. 174) further refined the ZPD to account for development at the level of collective rather than individual activities as follows:

> The distance between the everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions.

The MUGs activity system is an example of this new form of collectively generated activity (Engeström, 2001). It was formed as the lecturers worked to resolve the double bind that arose as a result of their contradictory situation. L8's comment highlights the transformation of thinking from being frustrated in an individualistic environment to actively creating collaboration.

The lecturers interacted with Moodle, a tool or mediator in their activity system, during the DWR-based Intervention, and this served to transform the object of their activity system from learning Moodle competency to engaging with students via technology. I observed a notable difference in how lecturers perceived Moodle by the end of the Intervention. In the first session the participants were negative and frustrated, but by the end their attitude had changed and they appeared more confident and positive.

Despite the lecturers' positivity a tension arose and was discussed for a considerable time during session six. The participants were concerned that their competency in the use of Moodle would be exploited by colleagues and management in the School and they would be called upon to give training to others. They argued that they had invested their time by participating in the Intervention and setting up MUGs and were not willing to act in a training role as

they themselves were still learners in the use of Moodle. In activity theory terms this is a division of labour issue as the participants were not willing to take on the job of informal training of colleagues. The Intervention brought about a change in the division of labour in that the participants, through a collaborative effort, worked on an object in a way that they had not done before. The individualism of the context had been broken down by the Intervention and this enabled the change in the division of labour. This is an example of the practitioners jointly constructing a new model of their own activity, which Engeström (1999a) claims is an aim of DWR interventions.

4.9 Chapter summary

This chapter presented an analysis of the DWR-based Intervention conducted in the Business School at ITWI. The activity theory analysis began with a description of transformations in the lecturers' activity system and how their view on engaging with Moodle changed. A discussion of the data was then presented by drawing on Engeström and Sannino's (2011) methodological framework. Employing this framework I undertook an analysis which showed the discursive manifestation of contradictions in the lecturers' activity system. This illuminated tensions that the lecturers experienced in their work practices, including their engagement with Moodle. Next, I tracked the changes in the object of the lecturers' activity system throughout the DWR-based Intervention and showed how a transformation in lecturers' thinking occurred as they worked collaboratively to bring about a new form of activity. The next chapter expands the analysis by drawing on the work of Basil Bernstein in order to further understand the setting.

5 Chapter five: Analysis 2 - Situating the Intervention in the wider framework of the Institution

5.1 Introduction

Chapter four provided an analysis of the data collected using activity theory and showed how contradictions became manifest in the discourse produced during the DWR-based Intervention. In this chapter I consider my second research question (see section 3.11), I aim to further understand the setting by turning to the work of Bernstein to complement the activity theory analysis. I expand the analysis by explaining how the manifestations of tensions and contradictions discussed in chapter four may have been generated by the macro structures of ITWI. The activity theory analysis discussed in chapter four enabled an analysis of contradictions and tensions, which facilitated an understanding of how transformational learning occurred. I argue that a further exploration of the data using Bernstein's classification and framing model within the activity system facilitates both a complementary and an insightful perspective on the discourse recorded during the study and allows for an examination of the source and genesis of the manifestations recorded in chapter four. The combination of activity theory and Bernstein's work enables me to distinguish analytically between something that is manifest and something that is generative. Bernstein's work provides a way of describing institutions which places the focus on the relationship between institutional factors and individual functioning (Daniels, 1987).

This study examines a DWR-based Intervention which brings about a shift in the division of labour as a result of an attempt to improve the use of a tool (Moodle), but I also want to understand the mutual transformation of the individuals and the structures of the organisation in which they participate. Therefore, this chapter considers how the discourse produced in the different contexts in which individuals participate reflects the structure of that context. Different institutional modalities can be described in terms of the relations of power and control, which give rise to distinctive discursive artefacts (Daniels, 2008b). I

analyse the differences in the discourses recorded during the study in terms of the contexts in which they were produced. I use the Bernsteinian argument of classification and framing to do this and consider three different contexts. Firstly, the context of primary interest, i.e., that of the DWR-based Intervention, which I refer to as the "MUGs context"; secondly, the wider context of the Business School, where the participants work and where the DWR-based Intervention took place; and thirdly, the context of the School of Furniture, Design and Technology (hereafter, FDT School), from which I take a focus group. The discourse in each context is produced in activities which are structured through specifiable relations of power and control. I explain how the Business School was classified in Bernsteinian terms. I also show how the DWR-based Intervention changed the classification that I found in the Business School. Furthermore, through the use of specific examples, I demonstrate how participant lecturers (subject) changed their position as a result of participating in the DWR-based Intervention. Through an analysis of data collected from the focus group at the FDT School, I also demonstrate how the classification created through the Intervention exists organically in this School. By using Bernstein's work, which relates social positioning to the distribution of power and principles of control, I aim to analyse how the recorded discourses reveal the links between social position, mental dispositions and division of labour. The use of activity theory allows for a focus on movement in the object of the activity system by looking at the subject. The use of Bernstein's work allows for a more detailed focus on subject position and thus movement in the subject of that same activity system. In this chapter this change in subject position is analysed to show how lecturers recontextualise their work environment. This focus on subject position reinforces the relevance of Bernstein's work to my study, which is concerned with the impact of the cultural context on the use of Moodle. Focusing on the use of Moodle in different contexts within the same institution allows for an understanding of how people recontextualise their professional institutional life.

5.2 Cultural reproduction through MUGs

The DWR-based Intervention was an initiative that sought to alter the context in order to understand the impact of the context on the lecturers' engagement with

Moodle. In doing so it brought about a shift in the division of labour and enhanced collective thinking, as chapter four demonstrated. The Intervention engaged with the tensions, dilemmas and conflicts that lecturers experienced in the social world of the Business School context. The participant lecturers became involved in collaborative work with colleagues during the DWR-based Intervention. Contradictions and tensions arose in the definition of motives and object of networks of activity that drive the requirement for analysis. This requires an extension of the production of cultural artefacts in activity theory. The DWR-based Intervention resulted in the establishment of the MUGs group in the context of the Business School. Having explained in chapter four how this group was established and developed, it is necessary now to take the analysis a step further and explore the discourse as a cultural historical artefact produced by the participants. Daniels (2004) asserts the necessity for an analysis of power and control within developing activity systems. An analysis of the discourse produced in the context of the Intervention facilitates the analysis of power and control relations in the developing activity system of MUGs. This gives a deeper understanding of the psychological impact of the transformational effect of the DWR-based Intervention.

A number of interesting elements are worthy of analysis as a result of the establishment of the MUGs group. Early in the DWR-based Intervention the lecturers spoke strongly of their individualistic work setting. It emerged that this individualism was counter-productive for the lecturers in their desire to gain competency in the use of the tool Moodle. The lecturers successfully established the MUGs group during the DWR-based Intervention and, as a result, developed this competency over time. Once the group was firmly established, the participants formed strong collegial bonds with one another. I noted (field notes, September 2010) that the lecturers became protective of the group, in the sense that they did not want others to join. Before session five, a head of department within the Business School asked if the MUGs group would deliver a show-and-tell session for the other lecturers in the wider context of the School. This request provoked a strong reaction from the MUGs participants, and they stated

that they did not want to become a "help desk" for the rest of the School. As one lecturer opines:

> **L2:** One fear I would have, and I think Polly alluded to it there, is I would be afraid to end up with a tag of the "Moodle helpdesk, 2884—he knows how you do that now, and he'll sort it".
>
> (Session five, October 2010)

L2 makes the point that he is not prepared to become a trainer of others in the School, but he fears that might happen because other lecturers in the wider School setting now know that he is part of MUGs and has developed competencies in Moodle-use. Other lecturers take up this point and further assert that in the wider context of the Business School they are now viewed as experts, as the following extracts illustrate:

> **L3:** At the end of the day, I could foresee a situation where you're up to your eyes trying to get something ready for the Masters class or the business one, whatever it is that you're doing, your prep or whatever, and you might be up against the clock as well, of course. But you'll get this phone call from a colleague that wants to sort out a quiz and there's a CA [continuous assessment] running and there's a deadline at 12 o'clock.
> **L8:** We're seen as being the experts.
>
> (Session five, October 2010)

The lecturers were aware that they had become known in the context of the Business School for their competency in the use of Moodle. As such, L3 is concerned that colleagues will come to him to look for help in using Moodle. The lecturer frames his concern by envisaging a situation in terms of time pressure, where he is busy with class preparation when another lecturer (colleague) asks him a question that needs an instant response for an impending assessment. L8 agrees with L3 by stating that the participants are now seen as experts in the use of Moodle. The lecturers discuss how they do not want to be seen as uncooperative; however, they do not see themselves as Moodle teachers and agreed as a group not to deliver the show-and-tell session that the Head of Department had requested. As one lecturer asserted:

> **L7:** I'm a learner of Moodle, not a teacher of Moodle.

(Session five, October 2010)

In activity theory terms this is a division of labour issue. We saw in chapter four how establishing the MUGs group changed the division of labour for the lecturers when they began to work together. While the Intervention-created context of MUGs provided a way for the lecturers to overcome their inhibiting individualistic setting, it is one in which cultural residues reside and constrain the possibilities for communication. In other words, I cannot ignore the point that these participant lecturers inhabit the context of the Business School every day, and, therefore, they have shaped, and been shaped by, this context. This is visible in the lecturers' discourse recorded during the DWR-based Intervention sessions. This newly formed collective of MUGs reproduces some of the same thinking that was visible at the beginning of the Intervention from the Business School context. For example, the participants' desire to insulate and sustain the MUGs group as a subgroup within the Business School reproduces some of the same thinking which shaped the individualistic setting that the participants complained about in the wider context of the Business School. The following example illustrates this point:

> **L7:** If others want to learn Moodle, let them set up their own MUGs group like we have done.
> **L1:** Yeah, they can put in the time and effort like we have done.
> (Session six, December 2010)

The MUGs group served as a mediating tool for lecturers to advance their knowledge of Moodle within the individualistic environment of the Business School. It was shaped and formed by the minds that had already been shaped and formed by that individualistic environment. The lecturers' desire to maintain MUGs as a self-contained group acknowledges the social, cultural and historical influences that gave rise to its formation. In this way the MUGs group is, in the Vygotskian sense, a social and historical construction, i.e., a cultural artefact. The discourse of the participants reveals that construction.

5.3 A model of description

In order to further analyse the discourse recorded in the contexts of interest to the study using Bernstein's (1996, 2000) model of classification and framing, the first step was to construct a model of description for the settings. The model refers to the contexts of interest to the research question, i.e., to understand how cultural context impacts on engagement with the technology Moodle. The model provides a way of describing the pedagogic modalities of language that have specialised meditational properties in each setting. It is important to note that modality used in this context is linked to the statistical notion of modal (Daniels, 2008b). It refers to the "most likely" occurrence, in that it is about the understanding that different social structures give rise to different modalities of language which have specialised meditational properties (Daniels, 2008a). I was interested in the most likely form of institutional practice that would be sustained in each setting and how that impacts on Moodle-use. It was of crucial importance during the DWR-based Intervention to try to identify points where communicative action would engage with transformation in the setting. The following three contexts form the basis of the model:

(i) the MUGs context (the DWR-based Intervention group)
(ii) the Business School context
(iii) the FDT School context

The model applies to these three settings as they refer to: the lecturers who were involved in the DWR-based Intervention, the wider context of the setting where the Intervention took place and the participants in the focus group from the FDT School. This model was constructed by drawing on the model used by Daniels (2010c), which is based on Bernstein's (2000) model. Bernstein tries to take measures of the institutional modality and looks at the relevant discursive practices in relation to one other. In this study I am looking at the relationship between the structuring of the macro institutional level and the practices of the micro interactional level during the course of the DWR-based Intervention. This is an attempt to understand how the broader social structures impact on peoples' psychological understanding of cultural tools. I am creating this model of description as a means of relating the social-cultural-historical contexts to the form of the discursive artefact produced. It is important to note that this is a

dialectical relationship; there are different factors at play, and, as such, the relationship is always in flux. I have developed a model of description that can be used to monitor changes that took place over the course of the DWR-based Intervention. I am analysing the discourse that was recorded in the three contexts described in the model. These discourses have arisen and been shaped by the social, cultural and historical circumstances where interpersonal exchanges arise. They in turn shape the thoughts, feelings, aspirations and identities for action of the individuals who partake in these interpersonal exchanges in each context. These understandings form the background to the development of an account of institutional structures as cultural historical products or artefacts. I aim to understand how the settings under study do their tacit psychological work through the discursive practices which they shape. This is what Wertsch (2007) calls "implicit mediation". I focus on the lecturers in their work setting and how they engage with the tool Moodle. It is by using this model of description that I attempt to understand how the setting shapes the discourse produced. The term "instructional practice" is used to refer to the practical actions of the lecturers' pedagogic practice (Bernstein, 2000). The instructional element refers to transmission of skills and their relation to each other, whereas the regulative element refers to principles of social order, relation and identity. These elements always co-exist, but for the purposes of analysis it is useful to consider them separately. Framing is evident in (i) the instructional aspects of the transmission which tells us about the "*what*" (what is transmitted) and the "*how*" (how content is transmitted), and (ii) the regulative aspect which communicates the principles of social order, beliefs, values and identity; they tell us the "*why*" and the "*where to*".

I apply Bernstein's (2000) concepts of boundary strength (classification) and control (framing) in the model of description. For each context of interest to this study, the strength of classification (horizontal division of labour) in the lecturers' practices and control (framing) of the practice (development of Moodle competencies) was examined. The vertical division of labour was also examined for each context in terms of the strength of distinctions and hierarchy and associated relations of control within that hierarchy. The strength of

distinctions in the vertical division of labour between the MUGs group and the wider context of the Business School were also noted, as was the strength of control over the regulative practice (issues of values, beliefs, order and identity). The tables below (5.1, 5.2 and 5.3) show the features of the practices which were modelled in each context.

Instructional Practice	*Classification*	*Framing*
Horizontal	Yes	Yes
Vertical	Yes	Yes
Regulative practice		Yes

Table 5.1: The MUGs context: model features

Instructional Practice	*Classification*	*Framing*
Horizontal	Yes	Yes
Vertical	Yes	Yes
Regulative practice		Yes

Table 5.2: The Business School context: model features

Instructional Practice	*Classification*	*Framing*
Horizontal	Yes	Yes
Vertical	Yes	Yes
Regulative practice		Yes

Table 5.3: The FDT School context: model features

The data were gathered through the DWR-based Intervention, a focus group, interviews and observations, and they were used to describe each aspect of this model for each of the contexts.

My attempt to describe the three contexts in terms of classification and framing is based on a model that shows the relationship between the theory of instruction and the relevant aspects of pedagogic practice. The theory of instruction, as applied to a pedagogic practice, places the emphasis either on transmission or on acquisition. In the case of this study, the emphasis was placed on acquisition, namely how the lecturers acquired skills in Moodle-use in order to improve their own pedagogic practice. The intention in using this model to describe the pedagogic modalities of each setting is to gain a deeper understanding of how the lecturers' discursive practices are shaped by those

settings. This works towards answering the research question—what is the relationship between cultural context and lecturers' engagement with Moodle?

In order to use Bernstein's classification and framing model for the three contexts under consideration (Business School, MUGs and the FDT School), I have drawn upon the coding frame employed by Daniels (2008a). The coding of each context in terms of classification and framing values was based on data collected throughout the course of the study. The coding was performed using four levels for both classification and framing, as outlined in table 5.4 below:

Strength of Classification	***Descriptor***
C- -(very weak)	Lecturers work in groups as individuals pursuing different tasks
C -	As above, but similar tasks
C +	Lecturers work as individuals, but on different tasks
C + + (very strong)	Lecturers work as individuals, but on same tasks
Strength of Framing	***Descriptor***
F – -(very weak)	Lecturers control selection, sequencing and pacing of instruction
F -	Lecturers control some of the above
F +	Lecturers have some influence on selection, sequencing, pacing and criteria of evaluation
F + + (very strong)	Lecturers have no control over selection, sequencing, pacing and criteria of evaluation

Table 5.4: Classification and framing criteria for coding the lecturers' work setting. Adapted from Daniels (2008)

The values of classification (C) and framing (F) range from very weak (- -) to very strong (+ +). These values are not absolute but are operationalised in terms of the research in order to facilitate a description of each context using Bernstein's (2000) model. This enables an analysis in terms of the relationship between the relations of power and control, which is what ultimately produces the particular discourse in each context under study. The principal artefact in which I am interested is discourse, the "talk" or discussions which are produced in the social contexts of interest to the study. Examining the structure of discourse gives the potential for examining macro relations in micro interactions. In order to see the structure of the social organisation in the "talk", it is necessary to perform a more sophisticated analysis. An analysis of the discursive artefact

allows for a deeper understanding of the mutual shaping of individual consciousness and context. Bernstein's classification and framing argument provides the tools with which I attempt such an analysis.

5.4 Classification and framing of the Business School context

I classified the Business School as having strong framing in the instructional and weak framing in the regulative. See table 5.5 below:

	Instructional	*Regulative*
Business School	C++F++	F--

Table 5.5: Classification and framing of the Business School context

Both the mirror data from the individual interviews and that recorded in the first session of the Intervention show that the Business School is strongly classified (C++). The consciousness is highly individualistic as strong boundaries exist between the lecturers as individuals. This is evidenced in the following extracts from transcripts:

> **L5:** I do my own thing.
> **L7:** I am an island.
>
> (Individual interviews, January 2010)
>
> **L3:** I'd love to know what you're doing, what you're doing [*pointing to different participants*]…
>
> (Session one, March 2010)

In the first Intervention session the lecturers discussed the fact that they have very limited interaction with each other in their work environment. I observed and noted (field notes, March 2010) that the lecturers saw this as an inhibiting and limiting feature of their work environment. They discussed the fact that they do not interact with each other as a limiting feature of their work environment. The lecturers frequently referred to their own subject area in their discussions, thus emphasising that the focus for each lecturer was of an individualistic nature. The discursive form reflects the strong classification, i.e., the heavily bounded nature of their work environment. The resulting consciousness of the lecturers is reflected in this discursive form, whereby the individualistic nature of the environment is seen as a barrier in moving forward with the technology Moodle.

In session one, L8 suggested that the information technology (IT) lecturers could show the other lecturers how to use Moodle, a suggestion that was rejected by the participant IT lecturers. The following extract shows their exchange:

> **L8:** It's you guys who can actually tell us what would make our lives more interesting or our students' lives…
> **L6:** [*interrupting and with a look of disbelief*] But, it's not…
> **L8:** …because we don't know.
> **L6:** If we're relying on voluntarily getting it from the IT lecturers, you're basically saying that the Institute is not doing something.
> (Session one, March 2010)

The suggestion also illustrates that the lecturers see themselves as isolated from one another by subject area, which indicates strongly bounded categories. Also, L6's (an IT lecturer) rejection illustrates that there was no move toward a possibility of working together to solve the problem at this point. This indicates a social division with strong boundaries, which is typical of a strongly classified environment. It is the insulation between the categories of discourse that maintains the principles of their social division of labour (Bernstein, 1996). L6 implies that if the lecturers expect to get voluntary help in the use of Moodle from IT lecturers then the Institute is somehow failing in its responsibilities to provide adequate Moodle training. His comment also indicates the boundaries that exist both between lecturers within the Business School and possibly between the School and the wider institutional setting. The strong boundaries give categories their identity and are also an indication of power relations. The IT lecturers do not see themselves as having any responsibility for teaching Moodle to other lecturers and reject any such suggestion. This indication of strongly bounded categories implies a strongly classified unit wherein the social divisions of labour and identities are clearly established.

The lecturers discussed what they perceived to be the inappropriate generic Moodle training provided by ITWI and how they had no input into the nature of this training, which was delivered by the Computer Services Department. This further indicates that strong boundaries possibly exist between the institutional departments. Boundary is a key concept in Bernstein's model of the structural level. A structure is distinguished in terms of the relationships between

categories. The strongly insulated boundaries that are evident firstly between lecturers in the Business School, and secondly between that School and other departments—for example, Computer Services—confirms a description of the School as being strongly classified (C++).

Framing refers to the nature of control and operates analytically over two systems of rules: the instructional and the regulative. For Bernstein (1996) framing is about "who" controls "what". The instructional refers to discursive rules of pedagogic interactions. The regulative refers to the social rules. The instructional discourse is of particular interest in this study in which the focus is on the pedagogic practice of lecturers and how they engage with Moodle to improve their own practice. In order to understand how the lecturers engage with Moodle, it is necessary to look at the factors which constitute control within their work context. The constituent elements of the instructional discourse as set out by Bernstein (1996, 2000) allow for an analysis of this control from the recorded discourse. These elements are selection, sequencing, pacing and criteria of evaluation. The result of this analysis subsequently allows a value for framing to be assigned to the context. In the context of the Business School, I established that the framing over selection and sequencing was weak, but framing was strong over the pacing and criteria of evaluation. It is possible for framing values to vary with respect to the elements of the practice (Bernstein, 1996). The evidence for the framing values assigned is visible in the lecturers' talk about working to a prescribed syllabus and towards achieving the learning outcomes of that syllabus (*selection*); as one lecturer stated:

> **L4:** The learning outcomes are my Bible.

The following statement from a lecturer typifies how the lecturers view their work environment in terms of selection and pacing:

> **L12:** Well, the deadlines and rules and regulations—so you understand your course factors and the job spec—and you have your delivery hours, the lectures, and you have your syllabus, and you have guidelines to meet, so obviously that's not an issue. You

> deliver it according to the schedule, end of story. They're non-negotiable.

L12 emphasises that the lecturers work according to a syllabus and are required to deliver within a given time frame. As she said, "they're non-negotiable". While it may appear that the selection could be strongly framed, it was assigned a weak framing value because the lecturers themselves have responsibility for syllabus writing, as part of course design. So, while they work to the syllabus content, they have control over writing the syllabi. This indicates the weak framing value assigned to selection and the strong framing value assigned to pacing.

Another lecturer made the following comment about time, which again supports the strong framing of pacing:

> **L6:** Time is a major issue. For example, I was sick for two weeks last term. Two weeks was like…it felt like I had lost two months. I found I was doing catch up. I was just tied to time, trying to get a short module covered in the time, particularly with exams before Christmas. It's very pressurised.
>
> (Session one, March 2010)

It emerged that the criteria of evaluation for the lecturers was getting their students through the final exams. The following comments were given by lecturers when they were asked how they knew if they have achieved their goals:

> **L5:** Primarily the exam.
> **L6:** Other than to make sure that as many students as possible pass.
> **L4:** I gauge it by the 40% and have they met learning outcomes or not, you know? And, if they get 40 or more, and if they haven't met the learning outcomes, they don't …
>
> (Session one, March 2010)

The criteria of evaluation were strongly framed based on lecturer agreement that the student performance in the exams was how the lecturers' work was judged. The lecturers did not talk specifically about sequencing of material, but they questioned if the use of Moodle would enable them to deliver the content of subject modules in a more engaging way. They appeared to have control themselves over how they delivered the course material and therefore sequencing was deemed to be weakly framed.

I observed from the lecturers' discourse that they did not appear to have any overpowering moral order about who they were as a collective. This emerged through the regulative discourse, which refers to the social order of the environment. Lecturers made the following comments about their work environment:

> **L 10:** We don't have an informal situation to meet.
> **L 4:** I think, as a community, we're very loosely coupled. We're normally *very*, *very* loosely coupled.
> (Session one, March 2010)

In the first DWR-based Intervention session, it emerged that the lecturers were dissatisfied with their knowledge of Moodle and were concerned about improving their pedagogic practice. While they had a desire to gain competency in the use of Moodle, and indeed in other technologies, they felt powerless to move forward. The discourse in the first session was strongly negative, and the lecturers seemed frustrated with their position, as the following extract illustrates:

> **L8:** […] I've given up, actually. I've been beaten; there will not be a staffroom while I'm still here. That's basically what you need […].
> (Session one, March 2010)

Here, L8 referred to the need for a designated space where the lecturers could meet one another to have informal discussions. This was proposed as a measure to potentially counteract their individualistic environment. This illustrates the degree of the lecturers' concern about the lack of connection with each other in their work environment; it is indicative of weak regulative framing. The lecturers recognise the individualistic nature of their environment and that this is not conducive to learning and development, but there is an air of learned helplessness about it. One lecturer made the following point about the work environment:

> **L6:** We have a very bureaucratic…or bureaucracy, the buzzword, if you want…everything is procedurised and documented, and you have to go with that.

(Session one, March 2010)

This comment indicates how the lecturers see their work environment as strongly controlled.

The "how" to get Moodle training

Upon discussing how the training provided by ITWI did not serve their needs, the lecturers struggled to find a solution that would enable them to develop their skills in the use of Moodle. One lecturer opined:

> **L3:** It comes from the factory floor; it's communities of practice—a group of people just get their heads together and say we are going to make this happen. I don't think it will come from the management layer. I don't think it will come from the Institute layer. It won't come from the School. It won't come from the Department. And, even if it did come from one of those, I don't think *we* as a staff would do it. It needs to come from the floor.
>
> (Session one, March 2010)

The lecturer here refers to the hierarchical structure of ITWI, i.e., the managerial levels including top-level, school-level and department-level management. This aligns with Daniels' (2010a) assertion that invisible semiotic mediation is embedded in the everyday activities of peoples' lives. It is concerned with how unselfconscious, everyday discourse mediates mental dispositions and our tendencies to respond to situations in certain ways and how it creates beliefs about the world in which one lives, including about phenomena that are supposedly either in nature or in our culture (Hasan, 2002). This extract illustrates L3's belief that the only way for lecturers to move forward and engage with Moodle is to take action themselves. This extract also illustrates how the institutional structure, as a cultural-historical product, plays a part in implicit (Wertsch, 2007) or invisible mediation (Bernstein, 2001). For example, L3 suggests that help will not come from the hierarchical layers of ITWI, but he also believes that even if it did, the lecturers would not avail of it; as he remarks: "And, even if it did come from one of those, I don't think *we* as a staff would do it". This indicates his opinion of the lecturers' beliefs about getting help through the formal channels in ITWI. His belief comes from his knowledge of the context in which he participates and by which he has been s haped (Daniels, 2008a). This also indicates the formative effects of the social context of

production at the psychological level which, for Wertsch (2007), is invisible mediation in that it is embedded in the discourse of an individual's everyday, ordinary activities (Daniels, 2012).

I observed that the DWR-based Intervention context shaped the possibilities for communicative action as the lecturers began to talk in the collective "we" and to discuss the need for autonomous action. Crucially, this was the point in the session where the lecturers turned and made a concrete proposal to look for an external resource to help them to engage with Moodle on a more advanced level. This move towards a solution highlights the level of the lecturers' frustration that I noted in my field notes at the end of the first session (March 2010). The lecturers did not argue against this comment. They were more driven to find a way of developing their skills in Moodle and thus enhance their pedagogic practice because they believed that ITWI would not satisfy this need for them. This is also suggestive of how the lecturers see their relationship with the management structure at ITWI. Bernstein's account of social positioning suggests that subjects develop rules for recognising what a social activity context is for and how that activity should be carried out through their experience of, and participation in, pedagogic practice mediated by pedagogic discourse (Daniels, 2008a).

5.5 Classification and framing of the MUGs context

As discussed in chapter four the lecturers formed their own group (MUGs) during the DWR-based Intervention. It is necessary to further examine the context of MUGs in order to make sense of the discourse produced.

	Instructional	*Regulative*
MUGs	C-- F--	F++

Table 5.6: Classification and framing of the MUGs context

Table 5.6 shows the classification and framing values assigned to the MUGs context. The following section explains why these values were applied to the context. As the DWR-based Intervention sessions progressed, it emerged that the

participants in the group were bonding with each other, while also developing their skills in the use of Moodle. Their formation of a collective group can be viewed as a reaction to the individualistic environment in the Business School which they had criticised at the beginning of the study. The MUGs group is classified as weak. This classification is based on the fact that there was no evidence of strong boundaries existing between the lecturers. Although they came from different subject areas, they worked together and shared with one another, and, at times, they used the subject area of one lecturer as an example from which they could all learn specific features of Moodle. This illustrates weak boundaries between the lecturers as they showed willingness to work towards the common goal of increased engagement with Moodle. For example:

> **L8:** I've got a quiz here for one of my modules. Would it be okay to have a look at it as a group? We can use it as a sample, if people are okay with that? There are a few specific things I need to find out about quizzes before I run it with the students.
>
> (Session three, May 2010)

In this instance L8 asked if her quiz could be used as a sample from which the entire group could learn. The lecturers agreed and seemed happy to work together in this way. They used this lecturer's quiz as the sample and then later applied the learning in their own subject area. In the final DWR-based Intervention session, when reflecting on the Intervention process, L8 remarked:

> **L8:** Yes, and it's also a more cooperative approach because I might have been first to do the online quizzes, but now, as I say, Emma is the Queen of the Quiz because she has shown me other ways to improve your setting up the quiz, so it's not that one person becomes the expert and teaches everybody. We all have our own experiences. So one might be ahead for a week and then somebody else will find another item that will make life easier, and show each other.
>
> (Session six, December 2010)

This excerpt shows that L8 believes that although she may have been the first of the MUGs group to learn and trial online quizzes using Moodle, she acknowledges how another lecturer, Emma, later showed her ways of improving the quizzes. This exemplifies the collaborative way in which the MUGs participants began to work. It also suggests that they were not heavily insulated

from each other, as I had observed they were in the early mirror data and first DWR-based Intervention session. I observed from their discourse artefact that the lecturers were now willing to share, work and learn together. The Intervention was succeeding in changing the division of labour. The power was vested in the group as a collective rather than imposed from above by a hierarchy. I noted how the structural relations of power and control within the group gave rise to a different discursive formation than that which I had observed previously as the lecturers discussed the structural relations in the Business School (Daniels, 2012).

In Bernstein's (1996) model, power is spoken of in terms of classification, which explains the weak classification of this group (C--). I noted that the "what" and "how" this group learned was not imposed from any outside authority; instead, they themselves took complete control of their own learning. Throughout all the sessions the group continuously discussed and reached consensus on which features of Moodle they would concentrate on in order to reach an advanced level in those aspects of the tool. They directed the sessions to their own advantage, ensuring that the training would be appropriate and customised for their needs. This indicates that the individualism recorded in both the mirror data and the first DWR-based Intervention session had, to a large extent, been broken down by this group. A change in the division of labour enabled this to come about. I noted (field notes, June 2010) that the consciousness was collective, in contrast to the highly individualistic consciousness that had been recorded at the beginning of the Intervention. In Bernsteinian terms this indicates a weak instructional element in framing. For example, the following extract from the end of the third session (May 2010) illustrates the lecturers' thinking:

> **L1:** We really are the Moodle users in Business now. We've learned, and I think we feel as if we are doing something for ourselves. Like, it's great to get together with a few people and work on making things better, isn't it?
> **L 2:** Yes, we should keep this group together because we are learning and we can progress by helping each other out. We're willing to put in the time. We can be the Moodle users group, yeah, MUGs for short. [*group laugh*]

L 8: I think that's a good idea, because everyone here is interested in moving on, and it's great to have a few people who are willing to work together.
L 10: It feels good to be part of this. Yeah, MUGs, that's a good name for us. [*group laugh*]

(Session three, May 2010)

It had become evident by this point of the Intervention (end of the third session, June 2010) that the group had bonded, especially as they had given themselves a name. They laughed at the idea of their group name, MUGs, but I observed that they wanted to keep the name as a source of group identity. It was sustained throughout the Intervention and beyond. The group also became known as the MUGs in the wider context of the Business School and later in the wider context of ITWI where people learned and often enquired about the origins of the group and the type of work they did on engaging with Moodle. The extract above illustrates how the participants felt empowered by being part of the group; as L2's comment exemplifies: "we are learning and we can progress by helping each other out". This also signifies the collaborative nature of the group. L8 expands on this by saying that, "it's great to have a few people who are willing to work together". This stands in direct contrast to some of the participants' comments recorded at the beginning of the Intervention. For example:

L9: I try to solve the problems myself.
L10: There is no real environment for staff to interact.

(Session one, March 2010)

This is significant as the Intervention process moved somewhat towards addressing the lectures' issue with the lack of collaboration in their environment.

I recorded the regulative element of the MUGs context as strongly framed (F++) because the participating lecturers had bonded together, not just in giving themselves a name but also as they spoke positively in terms of "we". I noted at the beginning of the DWR-based Intervention that the mood of the group was frustrated and downbeat as the lecturers spoke negatively about their work environment. In the context of MUGs, I observed how the pattern of talk and mood shifted; as L10 above remarked: "It feels good to be part of this". The lecturers had developed a strong moral order in the MUGs context, which

indicates the strong regulative framing that emerged. Furthermore, at the beginning of both sessions four and five (September and October 2010), non-participating lecturers turned up to join in the sessions. They said that they had heard that their colleagues were learning Moodle skills in the MUGs group and they wished to join. While I thanked them for their interest, I explained that this particular group was part of a research study and not open to newcomers. However, I recorded in my field notes that after each of these interrupted sessions two participants stated that they would be unhappy if others were allowed to join their group. They commented that others should not be allowed to join MUGs but instead should be encouraged to speak to the Head of Department about starting their own groups. This illustrates how tightly knit the MUGs group had become. They were aware that they had created something (a collaborative working group) that did not exist in the broader community of the Business School and were eager to protect the integrity of their group. This suggests the strong regulative order that had been created, as I indicated by the strong regulative framing of the MUGs group.

5.6 **Lecturer position in MUGs**

In the previous sections I have shown how the wider context of the Business School was classified differently to that of MUGs. It was the DWR-based Intervention which brought about the formation of the MUGs group with a contrasting classification to that of the Business School. Activity theory analyses often focus on the possibilities for the object of an activity system. Arguably, there are also many possibilities for the notion of subject in activity theory (Daniels, 2008b). The results of my DWR-based Intervention are presented here as evidence of such a possibility. Bernstein's (1996) concepts of "voice" and "message" build the bridge between social position, division of labour and discourse. It is through the use of these concepts that I develop an analytical account of how the subject (lecturer) position changed through the DWR-based Intervention.

At the first DWR-based Intervention session, the lecturers were concerned about their subject position. As discussed in chapter four, one of the multiple objects of

their activity was to improve their pedagogic practice as a means of enhancing their subject position. Lecturers expressed concerns about appearing incompetent in front of their students because of their lack of technological skills, particularly with regards to Moodle. The lecturers discussed the need to use technology to enhance their delivery of lecture material and to bring it into line with twenty-first-century practice. A shift in the division of labour in the lecturers' activity system during the DWR-based Intervention, which resulted in the creation of the MUGs, opened up a new "space of possibility". We can say that the lecturers in the Business School comprise a category (a "voice", in Bernsteinian terms) for allowable ways of being a lecturer. Within the MUGs context that "voice" is expanded to accommodate advanced learning in Moodle. Therefore, the possibility exists for a lecturer (a subject) to adopt a different position in the MUGs context than they had held previously in the wider context of the Business School. Before the Intervention, for example, each participant held the role of lecturer, but, as a result of participating in MUGs, they were provided with the possibility of holding the position of lecturer with advanced Moodle skills. The following section illustrates the experience and subsequent change in the position of four specific lecturers who participated in the DWR-based Intervention. Here I demonstrate how each lecturer moved from a non-agentic position at the beginning of the Intervention to an obvious agentic position in the final session. I noted in particular that the non-agentic position had both affective and cognitive dimensions for the participants. The first two examples illustrate the affective dimension: (i) moving from anxiety to confidence, and (ii) moving from helplessness to control. The third and fourth examples illustrate the cognitive dimension: (iii) moving from ignorance to knowledge, and (iv) moving from traditional assessment to Moodle-based assessment.

Example (i) illustrates how L8 moved from a position of fear to one of confidence. In the first DWR-based Intervention session, L8 made the following comments:

> **L8:** We are not actually digital natives, and that's why we are reluctant to embrace that. So that's why we are saying we need to be

shown what to do, [*pleadingly*] because we didn't grow up with the technology.
Researcher: So, is that something that constrains you?
L8: It is, yeah. But we have to recognise that we are scared of technology to a certain extent.

(Session one, March 2010)

L8 indicates the lecturers' need to be led in attaining new technological skills, which implies that she sees a need for learning. She further expressed that lecturers had a certain fear of technology, which she also views as an inhibiting factor in their engagement with technology. I observed that her emotional expression suggested a belief that the lecturers could not advance with technology without having some support. In the final session of the DWR-based Intervention, L8 commented as follows:

L8: The opportunity to participate in MUGs gave me the confidence to think differently and to try new technologies in my teaching practice.

(Session six, December 2010)

L8's comments indicate that she has moved from a position of anxiety and uncertainty about adopting technology in her pedagogic practice to having a new state of confidence in her own ability to embrace technology. Her mention of thinking differently and trying new technologies suggests a very different position to that of being anxious and unsure of how to progress with new technologies. Thus, she moved from an emotional expression of anxiety to a position of confidence and self-assurance. This demonstrates a development in the lecturer's agentic subject position.

Example (ii) illustrates how L3 moved from a position of helplessness to one of control. L3, a management lecturer, expressed great concern about the Moodle training provided by ITWI in the first Intervention session. She described her situation after attending one such training session as follows:

L3: I did the training on Moodle, and I have to say, I came back a few weeks later, and I tried to do it, and I. Was. Stuck […].

(Session one, March 2010)

This comment suggests that the lecturer was helpless, even after attending training sessions provided by ITWI. She appeared frustrated by her own helplessness, especially given that she had taken the appropriate steps, as put in place by ITWI. After participating in the DWR-based Intervention, L3 made the following comment:

> **L3:** What I took from Matt [*the external expert*]…it was [about] giving you control.
>
> (Session six, December 2010)

This comment indicates a very different position for the lecturer at the end of the Intervention. This suggests a move from a state of immobility to a position of control. Again, this is evidence that the lecturer moved to an agentic position.

Example (iii) illustrates how L1 moved from a position of ignorance to one of knowledge. L1 is a lecturer in strategic management, and he talks of the lecturers' lack of knowledge with regards to Moodle's potential. He states:

> **L1:** So, where? We don't even know what the ceiling is in terms of those levels that we talk about, or what you could actually do with Moodle, and we will never go up the elevator until we find out what's on those floors.
>
> (Session one, March 2010)

Here L1 makes the point that the lecturers did not know what was possible with Moodle beyond a basic level of usage and emphasises their state of ignorance in relation to further possibilities with Moodle. At the final session this lecturer made the following comment when I asked if the participants wanted to continue being part of the MUGs group:

> **L1:** Yes, because it does add to us, it does give us information, it does allow us to bring it to the next step, and there are always more and more steps.
>
> (Session six, December 2010)

This suggests that the lecturer felt that the DWR-based Intervention had added some value to the participants. It implies that he had learned and was enabled to

move to the next step. He infers that there are always more levels of learning with Moodle, but he also suggests that the collaborative group enables the lecturers to get to these levels. This demonstrates a change in the lecturer's position from a frustrated state of ignorance to a more empowered knowledge of the possibilities available to him. The lecturer has moved to a position of agency.

Example (iv) illustrates how L2 moved from the practice of traditional class-based assessment to using a Moodle-based assessment. L2 is a lecturer in accountancy and, at the beginning of the Intervention, was recorded saying:

> **L2:** I think the other weakness that we have as well is we are maybe not fully aware. Like, if we talk about using Moodle at four different levels. We are not fully aware of what level three or level four is, and we need to look at someone outside the college who is using it at level three or level four, if you want to call it that, and see what they're doing […].
>
> (Session one, March 2010)

L2 is concerned about the lack of Moodle knowledge in the Business School. His comment suggests that he does not believe that he will advance through the levels in Moodle within the formal training provided by ITWI. He suggests looking for an external resource to gain more knowledge and experience of Moodle. I observed that at the beginning of the Intervention, L2 also talked about how he had traditionally conducted class-based financial accounting exams for a group of 200 first-year students. In session six, the final session, L2 noted that he had learned from the experience shared by another participant in the MUGs group about how to undertake an online assessment using Moodle. He subsequently replaced his traditional class-based accounting assessment with an online Moodle-based assessment for the same group of 200 students. He is recorded at the end of the Intervention as follows:

> **L2:** The collaborative nature of MUGs, both internal and external, served to instil confidence in the lecturers to embrace the technology and the knowledge-sharing process.
>
> (Session six, December 2010)

L2's change in his assessment methodology demonstrates how he changed his subject position. His collaborative learning experience in the DWR-based Intervention enabled him to bring about this change in his pedagogic practice. He had moved to a position of agency.

These four examples illustrate how some very different possibilities for the subject emerged through the DWR-based Intervention. After participating in the Intervention the lecturers occupied different spaces in terms of their pedagogic practice than they did at the beginning. There are moves from anxiety to confidence, from helplessness to occupying a position of control, from ignorance to knowledge of Moodle's potential and from using traditional class-based assessment to Moodle-based assessment. These examples provide evidence of the lecturers' shift from a non-agentic to an agentic position.

The way in which subjects are positioned with respect to one another within an activity carries with it implications for engagement with tools and objects (Daniels, 2008). In this study the change in the lecturer position for those in the MUGs group did have implications for engagement with the tool Moodle. The DWR-based Intervention facilitated L2 in learning from L8's earlier experience with her economics module quiz. Since both lecturers were participants in the Intervention, they were positioned differently to each other than they would have been in the wider setting of the Business School. Their new positioning within the MUGs group enabled the collaborative practice, which in turn afforded both lecturers the space for new possibilities; in Bernsteinian (1996) terms this is the "voice" of the category. Both lecturers occupied a different position within the MUGs context as they engaged differently in their practice than they had before the Intervention. L8 was an economics lecturer and also the first to conduct a Moodle quiz. L2 was an accountancy lecturer and learned from, and built on, the experience gained by L8. He extended L8's knowledge through his own adoption of Moodle quizzes. He then brought this knowledge beyond the MUGs group as he later collaborated with another accounting lecturer, who was not part of the MUGs group, in order to deliver a Moodle-based assessment for a

class of 200 students. In Bernsteinian terms this is the "message" of the activity. The "message" is a function of framing which indicates control (Bernstein, 2000).

I classified the framing of the MUGs context as weak (F--) as the discourse from MUGs illustrates collaboration and sharing of knowledge. This is distinctly different from the discourse recorded in the initial individual interviews and the first DWR-based Intervention session. As such, this discursive artefact represents a different institutional modality which was formed as a result of the different power and control relationship (Daniels, 2012) that emerged in the MUGs context. L2's change in subject position is evident in the following comments in both the first (March 2010) and the final Intervention sessions (December 2010):

> **L2:** We don't have the interaction.
> **L2:** We have no way of managing the knowledge.
> (Session one, March 2010)

These comments above are a direct contrast to L2's comments made in the final session:

> **L2:** The collaborative nature of MUGs, both internal and external, served to instil confidence in the lecturers to embrace the technology and the knowledge-sharing process.
> (Session six, December 2010)

This description given by L2 at the end of the DWR-based Intervention indicates how he changed his position. He moved from talking about lack of interaction and lack of knowledge management to working collaboratively in order to gain knowledge and share it beyond the group to enhance both his own pedagogic practice and that of another accountancy colleague.

I also observed how L2 had spoken about learning from the experience of lecturers in other institutes of technology during the Intervention. This experience was provided by Matt, who had worked previously with lecturers in other institutes. This further exemplifies L2's change in position, whereby his practice by the end of the Intervention was influenced not just by collaborating

with colleagues but also by information provided by Matt about Moodle-enhanced pedagogic practice in other similar institutes of technology.
The DWR-based Intervention afforded the participant lecturers the possibility of changing their subject position. The four examples above illustrate how the participants moved from a subject position of ignorance concerning the use and value of Moodle to one of knowledge and acceptance of its use and value. Holland et al. (1998) considered the development of identities and agency for participants in culturally constructed worlds, and they argue that participants shape, and are shaped by, their social position, which builds possibilities for engagement. Using this concept I argue that the DWR-based Intervention in this study facilitated a move in subject position which enabled, in Bernsteinian terms, the "voice" of the participants. The evidence of the participant "voice" is found in the recorded change in the discourse of the MUGs participants throughout the course of the DWR-based Intervention. Daniels (2008b) also suggests that in activity the possibilities for the use of artefacts depend on the social position occupied by an individual. As seen in this study the lecturers who participated in the DWR-based Intervention engaged with the tool Moodle in different ways than they had done previously. Thus, having worked collaboratively throughout the DWR-based Intervention, the lecturers were afforded a different social position which resulted in a different level of engagement with Moodle. Therefore, if we deploy Bernstein's concepts of "voice" and "message" to the Intervention, we can see the link between division of labour, social position and discourse, for which Bernstein (2000) argued. The participant lecturers recognised that they belonged to the MUGs, a newly formed distinct category in the Business School. They realised that being part of this group facilitated their engagement with Moodle and the development of their skills in a way that had not been available to them in the wider context of the Business School. The distinction between the discourse produced by the lecturers in the MUGs context and that which I recorded from them before the Intervention in the Business School context also shows the distinction between power and relations of control. The participants' learning of Moodle in the MUGs context shows the shaping effect of that context, in that the lecturers were empowered to take control over their own learning of Moodle. We can see how the institutional setting of MUGs

shaped the possibilities for communicative action, which in turn shaped the institutional setting (Daniels, 2010c).

5.7 The FDT School context

After the DWR-based Intervention had taken place in the Business School, I conducted a focus group interview at the FDT School (see Appendix H for interview schedule). The FDT School is located approximately 70 kilometres from the Business School in the main ITWI campus. The programmes delivered at the FDT School are honours degrees in furniture design, manufacture and wood-technology education. The rationale for selecting the FDT School was based on received wisdom at ITWI that collegial bonds and collaboration between lecturers was strong in this School. It was understood to have a naturally occurring collaborative culture. The use of a focus group interview enabled me to establish if the received wisdom was accurate and if the lecturers' engagement with Moodle there was different than in the Business School. I video-recorded the focus group interview and transcribed it in full. An analysis of the data collected at this interview facilitated an investigation of how the culture impacted on the lecturers' engagement with Moodle in their pedagogic practice.

I found that the FDT School presented a very different context to the Business School. The most striking difference was that the collaboration and division of labour that the Intervention facilitated in the MUGs context existed organically in the FDT School context. The strong sense of the individualistic environment that the lecturers in the Business School spoke about at the beginning of the Intervention was notably absent from the FDT School. Instead, I observed evidence of a strong team spirit and a collective approach among the lecturers in their engagement with Moodle. When I asked the focus group how Moodle was introduced to their work environment, they first stated that it was through their Head of Department. However, as the discussion progressed it emerged that they had expressed an interest in engaging with Moodle themselves, independent of the Head of Department, but they felt strongly supported by him. The following extract illustrates the discussion:

Researcher: How was Moodle introduced to your work environment?
FDTL1: I suppose through the Head of Department.
FDTL2: Yes. [*Others nodding their heads in general agreement*]
Researcher: Was there a policy? Did you feel pressure to use it, or was there a choice?
FDTL1: Well…for…beforehand we had a shared drive, and people put their notes in the shared drive, and it was just commonplace, and we were kinda told [*shrug*] that the shared drive was being replaced with Moodle.
FDTL2: Not at the beginning though. I think it was all kind of open at the beginning, open to yourself.
All: [*Overtalking*] Yeah, yeah, it was.
FDTL3: And then the following year, or maybe two years later, David [*referring to the Head of Department*] would have said, "we'll all use it". I think Paddy was the first to use it.
FDTL4: Looking at it when there was...yeah, Paddy was at the early stages.
Researcher: So, did you feel there was a pressure to use it?
FDTL3: It was nice pressure, as you were going forward.
FDTL1: I think, going on from what FDTL1 said, we had a system where there was an internal directory where we could put our notes and the students had access to it. But, because the majority of us don't live here and we don't have...we're not in the college grounds every single day, then we actually need some way of getting information to students and communicating with them. So, really, Moodle, it was a good thing. [*hands open*]
FDTL2: It was gradual, and, yeah, it was a natural progression for us.
(Focus group interview, February 2011)

I noted that the tone of this discussion was convivial as the lecturers reflected on how Moodle was introduced to their work environment. FDTL1 initially stated that it was probably through the Head of Department that they had begun to use Moodle, but, as the discussion progressed, it was noted that there had been a gradual natural movement to Moodle for the lecturers. When they were asked if they felt pressure to use Moodle, it was interesting how FDTL4 replied that it was a "nice pressure", as they were going forward. This suggests that the lecturers were happy about moving to use Moodle. I observed that they seemed willing and interested to learn and adopt the new technology. FDTL3 had earlier quoted their Head of Department as saying, "we'll all use it". The mention of David and the talk of a "nice pressure" suggest that the lecturers respected and trusted the decision of their Head of Department to use Moodle. This is distinctly

different to the situation I observed in the Business School (see section 5.3). In the first DWR-based Intervention session, the Business School lecturers centred their discussion, for a period, on how they could best be supported in moving forward and engaging with Moodle. One lecturer crucially stated: "I don't think it will come from the management layer" (Session one, March 2010). This statement exemplifies the distinctly different situation in the Business School. I noted that the Business School lecturers did not appear to have the same attitude towards their management taking a decision which they would subsequently have to implement. Rather, through the Intervention they came to believe that they should make the decision themselves and then work towards implementing it, so as to advance their knowledge of Moodle.

At the FDT School focus group, FDTL4 indicated in further detail how he saw the move to Moodle in their context. The following extract illustrates this:

> **FDTL4**: When you look at it there [*hands outstretched*], I can tell you, it was delivered here. Everyone around this table here [*pointing around the table*], I'd say they are all gung-ho. They are all wanting to move ahead and for various different reasons. And I'd say the majority of people out there, because there were some [*polite laugh*] people, and we really had to almost grab them by the hand rather than…but they weren't resisting. But I'd say the majority of us…like Geraldine now wouldn't be the most ah…technological…
> **Researcher**: So, what exactly do you mean by that?
> **FDTL1**: No. Well, it was just a lack of familiarity and probably it was really once we sat down, we might be interested. But it was kind of saying, ah no, no, we'll all go for it and if David…see, I think there is a strong leadership from the Head of Department here. Like, saying there's a line there now [*makes a line with his hand on the desk*], and we're getting rid of the thing here [*referring to a shared drive system*], and we all knew we wanted to, and anyway it takes the leader to stand up to say it like that. And there would have been various different points in time that your leader has to say this is the thing; they could be chancing their arm [*laughs and the participants laugh*], and he probably did. And it worked, as we know, and the people who were, ah…maybe…
> **FDTL1**: …dithering… [*laughs*]
> **FDTL4**: Yeah, dithering. There was a bit of handholding, and, like, FDTL3 would have chanced something like the multiple choice questions [*points to another participant who nods back in acknowledgement*]. They were all trying something [*pointing towards the other around the table*]. And, like, FDTL2 [*points to*

> *another participant*] decided to do a bit himself, too, and we could ask FDTL2 or FDTL1 [*points to both participants. The participants nod positively, saying "yeah, yeah"*] or whatever.
>
> (Focus group interview, February 2011)

FDTL4 makes some interesting points here which give further insights into the lecturers' work environment at the FDT School. He talks of the enthusiasm of the lecturers in their desire to "move ahead". He also makes reference to others—for example, Geraldine—who may not be seen as technologically savvy, but he makes the point that people like that did not resist a move to Moodle; rather, he opines: "we really had to almost grab them by the hand rather than…but they weren't resisting". I observed he spoke about this as if it was a caring gesture, suggesting that they did not want to leave anyone behind. This suggests not only that there was a strong collaborative approach taken to engagement with Moodle, but also that lecturers were openly aware of colleagues who needed more support in embracing the technology. This was not expressed with any negativity, but it was more an indicator of how the lecturers were closely bonded with each other. FDTL4 spoke about the importance of the leadership from the Head of Department in moving forward with Moodle. I noted that the discourse was positive and the lecturers seemed to have a strong sense of group identity and of working and sharing with each other. FDTL4 makes reference to others in the group—for example, FDTL3 and FDTL2—stating how they had tried out different features of Moodle and how others would in turn learn from them. I noted how the collective approach of the lecturers was emphasised in the discourse; this stands in direct contrast to the individualism and isolation of lecturers that was evident in the Business School discourse recorded during the DWR-based Intervention. The different discourses that arose in these two contexts are examples of what Bernstein (2000) calls institutional modalities. Using Bernstein's (1996, 2000) classification and framing concepts to model the structural relations of power and control that I find in these contexts gives insight into the shaping effect of institutions as well as the ways in which they can be transformed through the agency of those who inhabit them (Daniels, 2010c).

Another example of the collective approach at the FDT School emerged when the lecturers were asked about their support structure in using Moodle. The following extract illustrates this point:

> **Researcher:** What supports you in using Moodle?
> **FDTL5:** It's ourselves, really.
> **FDTL2:** Ourselves, like here around the table. It's ourselves, yeah. Like, I'll do this [*points to himself*], you do that [*points to another*], and so on like that.
> **FDTL1:** Yeah, it's ourselves, helping each other out.
> **FDTL3:** And YouTube; I discovered how to put up a quiz on Moodle on YouTube.
> **FDTL4:** Yeah, and we all asked FDTL3 then [*laughs; they all laugh*].
> **FDTL3:** Yeah, I gave you the link [*big laugh, and they all laugh again*].
> **Researcher:** So, is there a collaborative thing going on here?
> **FDTL2:** Oh, yes.
> **FDTL6:** Absolutely, yeah.
> **FDTL3:** A-b-s-o-l-u-t-e-l-y, yes.
> **FDTL1:** With any technology around here, that [collaboration] would be here.
> **FDTL3:** Oh, with anything, there's no one-upmanship at all, that's how it is.
> **FDTL4:** [….] let's say FDTL1 [*points to FDTL1*] is off doing something. We'd be thinking, well, okay, FDTL1 will come back out of there with a load of information and hopefully we'll piggyback on that. That's how it works here.
> **FDTL1:** Yeah, yeah, that's true.
> **FDTL3:** Or even, like, say FDTL2 would find something new and email everyone, saying: "Hey, check this out, it's brilliant". You know? That's super here [at the FDT School].
>
> (Focus group interview, February 2011)

As this extract illustrates the lecturers are extremely positive about how they work together and share new ideas and findings with each other. The discourse suggests they have a sense of responsibility towards the collective. When asked if there is collaboration within the School, I observed that they were united and emphatic in their response. FDTL3 emphasises with deliberate enunciation the word "absolutely" as he answers that question. FDTL1 further states that collaboration in their context applies to any technology, not just to Moodle, and FDTL3 further adds that it is normal for them to collaborate on everything, not just on technology. FDTL4 talks of how one lecturer might learn something and

others then "piggyback" on that knowledge. The discourse strongly suggests a closely knit collaborative work environment.

	Instructional	Regulative
FDT	C- - F-	F++

Table 5.7: Classification and framing of the FDT context

Using Bernstein's classification and framing model, I classified the FDT School environment as weak (C--). The evidence for this classification lies in the fact that I observed no strong boundaries between the lecturers themselves or between the lecturers and their management. They spoke of how they helped each other out and interacted regularly with each other in their work context, especially in relation to learning new technologies such as Moodle. The discourse illustrates how they think of themselves as a united group working together. The following extract from two lecturers discussing how they help each other to gain competency in new technology typifies the discourse recorded at the FDT School:

> **FDTL3:** It's for the greater good, like, if everyone is up to speed on it. Well, it's going to make life easier at the end of the day, you know what I mean?
> **FDTL1:** It's kinda like swings and roundabouts. Like, nobody feels, like, oh, I'm always the one giving. Like, everyone gives, but it's, you know? [*shrugs*]
>
> (Focus group interview, February 2011)

FDTL3's comment that "it's for the greater good" is significant. He is referring to how the lecturers learn something new and then share it with each other. His comment captures the essence of the collaborative spirit that I noted at the FDT School. FDTL1 further explains how it works for the lecturers at FDT when she states that "everyone gives". These extracts again imply a strong bond and the trust that exists between the lecturers. I also observed how the participants referred regularly to their manager (David) throughout the discourse. FDTL4 stated: "I think there is a strong leadership from the Head of Department". Later in the focus group interview, FDTL2 also spoke of the Head of Department when he talked about getting support from management; the following extract exemplifies this:

> **FDTL2**: Well, if we say to David that we're going to do a course or such a thing, or we need to go to the actual conference or whatever, it's always – "yeah, go for it". We don't really get that comeback from ITWI [*referring to the wider context of ITWI*].
>
> (Focus group interview, February 2011)

FDTL2's comment suggests that he is appreciative of the support he gets from his Head of Department. I noted that the data are generally suggestive of a supportive and reciprocal relationship between the lecturers and their Head of Department at the FDT School. There is a strong collective identity that includes both the lecturers and their Head of Department evident in the recorded discourse. The inclusion of the Head of Department in the group environment is significantly different from what I observed in the Business School. I would argue that the trust that exists between the lecturers results in a relatively weak divisions of labour, in that lecturers assume responsibility for tasks and disseminate their knowledge among the others. I observed that control within the group was weak (in a positive sense), in that the data suggests that the lecturers are given the freedom to assume responsibility for how they embrace not just Moodle but anything new in their work environment. This contributes to the weak classification of the FDT School context. In Bernsteinian terms, classificatory relations establish the "voice" of the category. The "voice" of the categories in the FDT School context is the space of possibility for a lecturer to occupy in the context. The "message" of that context is then the position that a lecturer actually takes up. Bernsteinian concepts of "voice" and "message" allow for an analysis of social position and mental disposition in relation to the division of labour. This is played out in the FDT School context in the lecturers' discourse. The lecturers at the FDT School talk of how they share the tasks of learning new competencies among themselves, particularly Moodle competencies. This is evidenced in the following comments from FDTL5 and FDTL2 when speaking of what supports them in using Moodle:

> **FDTL5:** It's ourselves, really.
> **FDTL2:** Ourselves, like here around the table. It's ourselves, yeah. Like, I'll do this [*points to himself*], you do that [*points to another lecturer*], and so on like that.

(Focus group interview, February 2011)

In the FDT School context the lecturers have the choice and freedom to occupy any position in Bernstein's concept of "voice". This is what they do when they each take responsibility for various tasks involved in engaging with Moodle. It is important to note that they seem to amicably decide to take on tasks themselves and then share their knowledge with others; the tasks are not formally administered. In Bernsteinian (2000) terms the "message" of the context is the actual position that they take up. This is revealed in the discourse with talk of FDTL3 trying quizzes and FDTL2 finding something new and emailing everybody else. This illustrates Daniels' (2008b) assertion that a socially structured zone of possibility rather than a single point can represent the subject, as it is understood in activity theory terms.

Bernstein's (1996) framing concept indicates control and is comprised of both instructional and regulative elements which regulate the acquisition of the "voice". In the FDT School context I argue that the control is weakly framed. The discourse suggests that the lecturers are controlled, although not heavily, in what they do. Their Head of Department makes decisions on what they will do in an authoritative yet consultative way that serves to unite the group. As FDTL4 asserted: "I think David is 100 per cent. I think he's very supportive in anything we want to do here". I noted how this type of reference to the Head of School at the FDT School is echoed throughout the discourse. This is suggestive of symmetrical relations between the Head of School and the lecturers; in other words, they are not clearly hierarchical (Daniels, 2010c). In this type of circumstance it can be difficult to separate the instructional from the regulative discourse as they are mutually embedded. I deemed the instructional element as weakly framed as the discourse suggests a collaborative approach between lecturers and their management. There is a strong sense of a moral authority, which gives an indication of the beliefs and values that are part of the context at the FDT School. Thus, the regulative element of the discourse is foregrounded, indicating that the lecturers have more control of the regulation. The lecturers' discourse signifies that they see their work context as an integrated unit where they take responsibility for their own acquisition of new technologies. They have

a strong group identity. In FDTL3's words they work for the "greater good", which is suggestive of the high moral order at the campus and indicates weak framing in Bernsteinian terms. The high moral identity of the lecturers is the outcome of the "voice"/ "message" relationship. I noted how the FDT context served its lecturers on both a cognitive and an affective level. The use of Bernstein's model helped to make this visible in that it provides a language of description to facilitate my analysis. The weak framing of the context shows how the lecturers successfully controlled their own learning of Moodle through a collaborative process, while the strong regulative order indicates their strong sense of personal identity and moral commitment.

5.8 FDT School and MUGs

The MUGs and the FDT School contexts were similar in terms of values of classification and framing. Both groups were coded as weakly classified and weakly framed. In both groups it was observed that these conditions of classification and framing facilitated the lecturers in satisfying their own need and desire to engage with Moodle. I noted how this stands in direct contrast to what I recorded in the Business School at the beginning of my study. I classified the Business School with stronger values of classification and framing. This reflected the individualistic environment where lecturers described themselves as being "stuck" and unable to move towards engaging with Moodle. The DWR-based Intervention sessions resulted in the formation of the MUGs, which had distinctly different classification and framing values from those that I assigned to the Business School. If we look at the MUGs as a subgroup within the Business School, we can say that they formed another category which was strongly insulated from the rest of the Business School. The DWR participants weakened the boundaries between themselves inside MUGs, but they also strengthened the boundary between themselves and the wider Business School context. Arguably, this is a form of cultural reproduction whereby the participant lecturers insulate themselves as a group as opposed to insulating themselves as individuals, as they had previously done in the strongly classified Business School. Taking the Vygotskian argument, the power and control relations of the MUGs context are more effective and efficient in supporting the learning and development of

individual group members than that of the previous category of heavily bounded individuals, as found in the Business School.

I also observed that the lecturers in the MUGs and in the FDT School contexts distinguished between their own group and the wider context of ITWI. In the case of MUGs, for example, in the final DWR-based Intervention session the lecturers spoke of keeping their group together and mentioned the need to set up different MUGs groups for others in the Business School rather than to allow them to join their group. They felt they had invested their time to gain a certain level of competence and that others should form similar groups if they wanted to gain similar competency in Moodle. Bernstein (1996) suggested that when there is a change in classification and framing values, and if we can identify that values are weakening, we should always ask what values remain strong. I would argue that while the DWR-based Intervention changed (weakened) the classification and framing values for the MUGs participants, it also facilitated the creation of a strongly bounded group within the Business School. The value of individuality remained strong, although it extended beyond single lecturers to encompass the MUGs as a strongly bounded group.

Similarly, in the FDT School context, while the lecturers there saw themselves as a cohesive working group, they also distinguished themselves from the broader context of ITWI. For example, when they were asked if they felt supported by ITWI in gaining Moodle training, one lecturer replied: "No, I think it's us. It's the people, it's obvious, us, we do it, not the Institution [*cupping his hands as if to emphasise a closed unit*]". Thus, they saw themselves as a united working group that, like the MUGs, was strongly bounded from the wider institutional context. This indicates that while both groups were weakly classified in terms of the boundaries between them as individuals, as a group there was strong insulation between them and the broader institutional context. Unlike the MUGs, the FDT School lecturers never implied a strong individualistic work environment.

Crucially, Daniels (2010c) suggests that it is not only the subject but also the environment that is modified through mediated activity. In the DWR-based

Intervention I noted the change in subject position for the MUGs participants (section 5.5), but I also observed that the formation of MUGs modified the wider context of the Business School as the MUGs became known as a separate cohesive group who worked together engaging with Moodle and, later, other relevant technologies. The power and control relations that were established in the MUGs context were found to be similar to those already existing in the context of the FDT School. In the FDT School, the regulative element of the pedagogic practice is foregrounded, and the lecturers' display of personal authority is evident. The MUGs context also foregrounded the regulative discourse by bringing about a shift in the division of labour; however, in this instance, it is an interruption to the dominant discourse of the Business School where the instructional element of the discourse is foreground whereby the lecturers floundered through lack of authoritative regulation. The MUGs participants did this by creating their own insulated category, similar to that which was found naturally occurring at the FDT School.

5.9 Chapter summary

Chapter five argued how Bernstein's classification and framing model was useful to extend the activity theory analysis presented in chapter four. By employing Bernstein's (1996, 2000) model I was able to conduct an analysis of the discourse that was found in the contexts of interest to the study: the Business School context, the FDT School context and the MUGs context which was created as a result of the DWR-based Intervention. The use of a model of description that was based on Bernstein's (1996, 2000) classification and framing model and Daniels' (Daniels, 2010c) model of description facilitated an analysis of the pedagogic practice by analysing the discourse recorded in each context. The analysis demonstrated how the DWR-based Intervention brought about an interruption to the dominant discourse of the Business School. The Intervention brought about a change in the division of labour, which ultimately emerged as the weakly classified MUGs context. The analysis showed how different social structures give rise to different modalities of language which have specialised meditational properties. These social structures are shaped by social, cultural and historic circumstances in which interpersonal exchanges arise. The creation

of the MUGs showed how the interpersonal exchanges that arose within it shaped, and were shaped by, the thoughts, feelings, identities and aspirations for action of the participants involved. The analysis of the discourse produced in the contexts also showed how the power and control relations within each context gave rise to specialised principles of communication.

The analysis provided a way of looking at the relation between the structural and interactional levels in the contexts of interest. The analysis of the interactional discourse that emerged in the DWR-based Intervention sessions gave the lecturers' engagement with Moodle a context through which the structural form of the setting became obvious. The use of a model of description to analyse and frame the discourse of the focus group conducted at the FDT School enabled me to demonstrate how the pedagogic practice established through the DWR-based Intervention was occurring naturally at another school in ITWI. This accords with Bernstein (1966), who suggests that different classificatory values could characterise whole organisations or different types could be found in the same organisation, albeit regulating different sections. In this study the Business School was classified differently to both the DWR-based Intervention context (the MUGs) and the FDT School context. The use of the FDT School focus group strengthens the argument about how the Intervention changed the structural form within the Business School by the creation of the MUGs context. The notion of subject position was also considered in this chapter. I demonstrated how the DWR-based Intervention allowed the participants to take up a position as a particular type of lecturer that was not available to them in the wider setting of the Business School. I also showed how subject position has implications for tool-use.

In the next chapter I return to Engeström's recent activity theory work to analyse the effect of the DWR-based Intervention work at the meso or wider institutional level of ITWI. The focus of the analysis in this chapter is on movement of information through the organisation. Specifically, how movement of the object from the DWR-based Intervention occurs throughout the wider context of ITWI. If we examine the wider unexpected impacts of the DWR-based Intervention, we

can access a powerful lens through which to understand the interconnection between micro-level events and macro-level structures. Activity theory provides a theoretical tool for the systematic conceptual elaboration of the movement of the object beyond the DWR-based Intervention itself.

6 Chapter six: Analysis 3 - Institutional impact of the DWR-based Intervention – a meso view

6.1 Introduction

Chapter five argued that Bernstein's classification and framing model was useful in extending the activity theory analysis of chapter four. It provided an analysis of the DWR-based Intervention by using a focus group from the FDT School to strengthen the argument that the DWR-based Intervention facilitated the creation of the MUGs context with a different structural form to that found in the wider setting of the Business School. In this chapter I consider my third research question (see section 3.11) and therefore I return to Engeström's work on activity theory to analyse the effect of the DWR-based Intervention at the wider institutional level in ITWI. The focus of the analysis in this chapter is on the proliferation of information through the organisation, specifically how movement of the object of the MUGs activity system occurs throughout the wider setting of ITWI. By examining the wider, unexpected impacts of the DWR-based Intervention, one can access a powerful lens through which to further understand the relationship and interconnection between micro-level events and macro-level structures. Activity theory provides a theoretical tool for the systematic conceptual elaboration of the movement of the object beyond the DWR-based Intervention itself. This chapter examines how the DRW-based Intervention sparked a chain of unexpected events that extended beyond the context of the Intervention into the wider ITWI context. I also examine the important human connections that facilitated the powerful movement of the object of the learning activity across the wider organisational context. I consider the interest of the organisation's management in the wider institutional effects of the DWR-based Intervention. Finally, I examine the way in which trails were created and boundaries were crossed to facilitate the movement of the activity's object throughout the wider setting of ITWI.

6.2 The Institute-wide effect and use of the DWR-based Intervention

I noted in chapter four that the DWR-based Intervention resulted in the creation of the MUGs group, which was established as a separate context within the wider context of the Business School. Additionally, the observational data recorded a number of effects and benefits of the MUGs context beyond the Business School in the wider context of ITWI itself. Engeström (2008), citing Perrow (1984), states that a singular local disturbance may point to broader structural tensions in an organisation. I noted such a singular disturbance in my own study. This section describes how other schools within ITWI came to know of the DWR-based Intervention and subsequently requested Moodle training classes with Matt, the external expert who had facilitated the MUGs participants in developing their engagement with Moodle. This happened initially as a result of chance meetings and informal discussions between me and the lecturers from other schools within ITWI. Initially, I facilitated these other lecturers in their requests on an informal basis by working outside established organisational practices. Three examples of how this information flowed through the organisation are outlined below.

On one occasion management requested that I attend an Institute-wide meeting on eLearning. Owing to the nature of this study as an examination of how cultural context impacts on lecturers' engagement with Moodle, I was seen as somebody who may be able to contribute to an Institute-wide discussion on eLearning. At the meeting I explained the work of the DWR-based Intervention and how the participant lecturers had formed their own group (MUGs). I further explained how they were developing competency in the use of Moodle through a collaborative process. At a later date two lecturers who had also attended the same meeting, but were not known to me, approached me to enquire about my research. They were from the School of Humanities and the School of Science at ITWI. Both lecturers expressed an interest in the DWR-based Intervention and commented on how they envisioned that their own schools might benefit from a similar process. I introduced them to the external expert, Matt, who was facilitating the Moodle training with the MUGs group at that point. After their

discussions with Matt about how the MUGs were making progress with Moodle, the two lecturers asked him if he would come to their respective schools to do something similar. Matt explained that he could not give training within the same framework of the DWR-based Intervention sessions as with the MUGs, but that he could give classes on Moodle based on material he had covered with the MUGs. This resulted in the organisation of informal Moodle training in those lecturers' respective schools. While these schools did not set up groups like the MUGs, as they were not learning in a similar collaborative research-driven context, they did inform me later of how they had benefited from their non-DWR-based Moodle training with Matt.

The second example arose from an informal conversation I had with the Head of School (Bridget) from another ITWI campus (the Castown campus) six months after I began the DWR-based Intervention in the Business School. I explained the nature of the DWR-based Intervention work to Bridget, whom I knew from having worked previously at the Castown campus. Bridget expressed an interest in having a similar intervention carried out at the Castown campus and asked if I would facilitate it. Owing to time constraints and my work commitments as a full-time lecturer, it was not possible for me to undertake a second DWR-based Intervention. However, I put her in contact with Matt, who subsequently gave Moodle training at that campus similar to what he had done in the School of Humanities and School of Science, as I explained earlier.

The third example occurred at a Learning Innovation conference in Dublin, Ireland where I presented a poster on the work of the study. Four lecturers and the Head of Department (David) from the FDT School who were attending the same conference approached me and expressed an interest in my study. They explained that they were already working together to engage with, and unlock the potential of, Moodle, but they could see the potential benefits in bringing in training from outside ITWI. Again, I introduced Matt to the Head of Department and between them they organised advanced Moodle training at the FDT School campus. Matt later noted the already advanced level and collaborative engagement of the lecturers with Moodle at the FDT School.

A number of issues are significant about these observations. These conversations which I had with other lecturers and heads of departments at ITWI were informal and chance meetings. They are representative of what Wenger (1998) describes as single discrete events that provide connections. I, as the researcher, was the obvious common thread in connecting all of the enquirers with Matt. This helps me to understand at least one medium through which people connect, collaborate and thus become part of a network in ITWI. These individuals were all connected through a focus and shared object of their pedagogic activity system, i.e., a desire to engage with Moodle. Cole (1996) asserted that, like gardeners, activity theorists must attend simultaneously to two classes of concerns: what transpires inside the activity system ("the garden") and what transpires around it. In the case of this study, the primary focus, or "garden", was the activity system of the participants from the Business School. However, the emergence of other activity systems around the focal context are also worthy of analysis as they illuminate the broader context in which the "garden" is embedded; in other words, the environment surrounding the focal context. I argue, in light of Cole's assertion, that heads of departments and lecturers who were external to the context where the DWR-based Intervention was actually carried out also demanded attention from me as the researcher.

The action of enquiring about the DWR-based Intervention work on the part of each interested party was significant in that every activity starts from an individual action (Leont'ev, 1978). New knowledge always starts with an individual, an individual acting as part of a stream of social activities (Nonaka and Takeuchi, 1995). The interest in the DWR-based Intervention expressed by lecturers from other schools suggests that they identified with the need for a supported effort in engaging with Moodle. While I cannot be certain of the historical formation of this need in contexts other than the Business School where this study was carried out, it is evident from the lecturers' enquiries that they shared at least one of the objects identified in the Business School at the beginning of the DWR-based Intervention, namely a desire to engage with Moodle and enhance their pedagogic practice using technology. I observed in each of the cases above that the individuals were interested in having Moodle

training specifically from Matt, the same external expert who was working with the MUGs group in the Business School. Informally, they commented to me how they did not see the generic Moodle training provided by ITWI as satisfying their needs.

Leont'ev (1981) made a distinction between actions and activities, which has relevance in this study. He defined activities as longer term formations of chains and networks of individual and cooperative actions. The fact that Moodle training was delivered in other schools (four in all) by Matt as a direct result of the DWR-based Intervention in the Business School is an example of a chain of cooperative actions resulting in new activities taking place throughout ITWI. The phenomenon observed here illustrates this distinction between actions and activities. The single enquiry of each lecturer or head of department is an action distinct from the subsequent cooperative actions between Matt and me, which ultimately resulted in the provision of Moodle training at those other schools. These events that resulted in the delivery of Moodle training can be seen as a chain of cooperative actions. It also further exemplifies a continued shift in the division of labour like that first observed in the Business School (discussed in chapters four and five). The Moodle training that took place in the other schools with Matt came about because of my chance encounter with a lecturer from each school and their subsequent expression of interest. Although the training at other schools fell outside the scope of this study, the fact that lecturers and heads of departments from those schools approached me to garner information on the DWR-based Intervention suggests a similar need in their own schools for intervention and help in engaging with Moodle. For example, I recorded the following comment in my field notes from a discussion I had with a lecturer from the School of Humanities:

> How did you get the Moodle group going in Business Studies? We really need to get something like that going in Art and Design [*the School where she worked*]. I could get the names of a number of people who would be interested in learning to use Moodle. We are really at a basic level, and many of us haven't used it at all yet. We could do with having a support group like in Business.
>
> (Field notes, June 2010)

This lecturer wanted to know how the MUGs group in the Business School had come together. I observed that she was enthusiastic in her approach, and she was interested in getting a similar working group together in her own school (the Creative Art and Design section of the School of Humanities), although she seemed to expect that I could spearhead the initiative as I had done in the Business School. I also observed that she displayed a level of frustration at her own and her colleagues' low level of Moodle competency through the use of the collective "we". I recorded this as being a possible symptom of the same systemic tension that characterised the lecturers' discourse in the first DWR-based Intervention session in the Business School. From an activity theory perspective tensions are critical in ultimately understanding what motivates particular actions and, thus, in understanding the evolution of a system more generally. I observed from my informal discussions with lecturers from other schools at ITWI that they were motivated to inquire about the DWR-based Intervention by their own desire to advance their Moodle competence and thus enhance their pedagogic practice. For example, I recorded the following comment in my field notes (September 2010) which was made by a lecturer from the Science School:

> I would like to be part of something like the MUGs, if we had that in our School. I really need to get more into using Moodle. I'm at a very basic level; all I do is put up notes on it. I'm sure I could improve my teaching if I knew how to use it properly.
>
> (Field notes, September 2010)

I observed from many informal discussions (field notes from 2010) with lecturers that they believed improved Moodle-use could enhance their pedagogic practice. Activity theory focuses on such motives as are found here and provides a framework for analysing how they bring about transitions within and between activity systems as part of evolution and innovation. Activity systems do not exist in isolation (Engeström, 1999a). This is one example of the MUGs activity system (from the DWR-based Intervention) interacting and influencing the broader network of activity systems of other schools at ITWI. In this conceptualisation, boundaries are crossed in an effective, albeit brief, way in that through the cooperative actions of those involved (the lecturers, the external expert and the researcher), four other schools outside of the context of the study benefited from

having Moodle training to satisfy lecturer demand. This is an example of the impact of the DWR-based Intervention spreading out into the wider institutional context.

6.3 External expert – making connections

The external expert, Matt, who was introduced to the organisation through the DWR-based Intervention subsequently had a significant organisational impact. As a result of working with the DWR-based Intervention and providing Moodle training for other groups, as requested informally, Matt offered the following broad perspective on lecturer engagement with his Moodle training at ITWI:

> When I came in to the MUGs first [*referring to the DWR-based Intervention group*], the people were enthusiastic about what they were doing. They wanted to be there, they wanted to learn, they had specific questions, and the questions got more specific as time went on.
>
> (External expert interview, November 2011)

In this extract Matt sees a community emerging, as he says of the participants: "they wanted to be there". The participants were becoming part of a group where he could see learning and progression taking place. What is interesting is that the information that originated in the DWR-based Intervention moved through the organisation, but it was not harnessed through any formal managerial channel; it stayed outside of official organisational practices and developed organically from the DWR-based Intervention. In June 2010, just before the third DWR-based Intervention session in the Business School, Matt strongly requested that I ensure that ITWI's internal Moodle trainer was aware that he was going to work with the MUGs group on Moodle as part of this study. During an interview with Matt (see Appendix J) in November 2011, I asked him why he had made that request, to which he replied:

> I was very keen to try and keep the college management, and indeed the other relevant departments [*referring to Computer Services*], in the loop as much as possible. I…ah…I….my job was not to step on people's toes, by any stretch of the imagination. So, at every opportunity I had, I tried to make people aware, if you want more sessions or extra sessions…but I didn't want to interfere with the

> MUGs [*DWR-based Intervention*], or I didn't want to blend the MUGs [*DWR-based Intervention*] in with other people. And, in saying that, the management of the staff development that *I* found wasn't as structured as I would have liked. There were no connections between the other MUGs [*referring to the various Moodle training classes that took place outside of the DWR-based Intervention group: "non-DWR"*]. The [non-DWR] MUGs very much operated as an independent entity. I didn't want that to be the case. I didn't set up for that to be the case, but I just think it's the way it evolved.
>
> (External expert interview, November 2011)

Matt further comments on Moodle training that he delivered in other schools at ITWI (incidentally, he also refers to them as MUGs). He specifically mentions that they managed to operate as an "independent entity". They did not become integrated into any formal staff development structure, which he said he would have liked as it would have extended the work from the DWR-based Intervention into the formal structures of ITWI. Matt was conscious that his introduction to ITWI was not through official channels and was wary of upsetting the personnel responsible for Moodle in the Computer Services Department. The consistently unofficial nature of Matt's involvement with Moodle training resonates with the findings of Kirkwood and Price (2014) that most technology-enhanced learning projects are small in scale and context specific, often remaining outside of formal channels.

It is important to emphasise that while I worked to facilitate and record the wider impacts of the DWR-based Intervention, it was empirically demanding as a solo researcher. Often a team of researchers is involved in a DWR intervention over a long span of time, and this facilitates the collection of data on a larger scale. Despite the demands of facilitating the Intervention, Matt refers to its advantages as he makes a crucial distinction between the continuity of the DWR-based Intervention sessions and other Moodle training that he delivered in various schools at ITWI. He notes that he built up a connection and a rapport with the DWR-based Intervention MUGs which did not occur with any other group. He commented on this issue when I asked him why he thought the MUGs from the DWR-based Intervention had bonded and worked well together and continued to successfully sustain themselves as a group. The distinction that

Matt makes is important in activity theory terms as it reveals the impact of the DWR-based Intervention. The commitment and consistent attendance of the MUGs participants from the Business School throughout the sessions demonstrates the strong sense of community that had emerged. Also, the division of labour within the School was changing as the lecturers were taking and maintaining responsibility for changing their individualistic situation and for their own customised training in Moodle. Matt commented as follows:

> That element of continuity and that constant level of support that was there that I was able to offer through that post really benefited it tenfold [*referring to the DWR-based Intervention group*] because, in the same time period, I came to several departments here [and] gave sessions but never heard anything from them after that.
> (External expert Interview, November 2011)

This suggests that although Matt delivered Moodle training in other schools as a result of information about the DWR-based Intervention work moving through ITWI, there were no significant actors who were willing to take responsibility for organising additional training with Matt. I noted that in all of the other schools Matt gave only one training session, despite the demand among lecturers for more. In activity theory terms the object of the lecturers' activity system was moving, but it needed the work of significant actors to sustain that movement. This is representative of the view of Taylor (2010) who asserts that in order to sustain a community the need for authority is foundational. As Engeström and Sannino (2010) theorises the achievement of coordination is a central manifestation of authority. I argue that Matt "never heard back", as he put it, from departments where he gave training because there was no authority to coordinate the activity in those schools. In the Business School the development of the MUGs group was sustained because they were part of the DWR-based Intervention sessions; the Intervention was managed and therefore provided a tool which sustained the activity for the lecturers. As the researcher I scheduled the sessions by liaising with Matt on behalf of the MUGs participants and organised them at times that suited both the participants and Matt, which was important as he was external to ITWI. In the quote above Matt acknowledges that the continuity of the sessions with the MUGs was a key factor in the level of

support he had been able to provide to the participants. The continuity of the sessions also had the impact of gradually moving Matt from a peripheral position as external to ITWI to having a central position in the participants' engagement with Moodle.

It is important to consider why Matt did not develop the same central position in any other school. I argue that it was not because of lack of demand on the part of lecturers in other schools; instead, it was the fact that nobody took responsibility for the process, and it therefore never became established in any other school. I also noted a number of occasions where lecturers from other schools who had attended training with Matt spoke positively of their experience and often expressed a desire to attend more, similar training with him. For example, the following comment from a lecturer in the School of Humanities, which I recorded in my field notes (September 2010), illustrates Matt's positive impact on the participants:

> Where did you find Matt? He has a great way of teaching technology stuff. I really enjoyed his session. I hope we get him back again. I know he is doing more with the MUGs group in your study, but it's great for us to get access to him.
> (Field Notes, September 2010, after session four of the DWR-based Intervention)

I noted (field notes, October 2010) that this comment was similar to many others I had received informally from lecturers about the Moodle training in their own schools (for the most part, one-off sessions). I also observed that people were aware that Matt was involved in the DWR-based Intervention in the Business School. This accords with Oncu, Delialioglu and Brown's (2008) findings in their study of mathematics teachers' adoption of technology that when teachers meet colleagues who are technically advanced, they begin to relate the potential of learning technologies to their own practice. In this study Matt was not a colleague in the sense that he did not work in ITWI, but I observed that lecturers identified with him because he had higher-level teaching experience as well as expert knowledge of Moodle. Therefore, the lecturers saw him as being well

positioned to help them to engage with Moodle and indeed other teaching and learning technologies.

Owing to the time constraints in combining this study with full-time work, I felt compelled to introduce Matt to relevant personnel in ITWI who could formally take advantage of what he had to offer lecturers who were interested in engaging at any level with Moodle. For this reason I introduced Matt to a project manager (Claire) in ITWI who had responsibility for the management of student-led learning and curriculum reform as part of a strategic-innovation-funded (SIF) project initiative at that time. I introduced Matt and Claire largely because of the level of positive feedback that I received from both the participants in MUGs in the DWR-based Intervention and lecturers from the other schools who had received Moodle training from Matt as a result of my informal connections. Following this introduction Matt and Claire were in a position to implement Moodle training for any subsequent demand that arose outside of the DWR-based Intervention. In activity theory terms the discourse artefact that arose between Matt and me as a result of participating in the MUGs activity system served as a tool to mediate the wider institutional community; it was a mediating artefact (Engeström, 1987). I observed that a demand arose for the type of interaction and training which Matt and I provided in the DWR-based Intervention sessions. This aligns with Cole (1996) who notes the emergent nature of mind in activity. When people attended one Moodle training session with Matt, they expressed an interest in having further, similar training as it obviously served their need to engage more with Moodle. I felt compelled to share the knowledge and experience that I had gained from the MUGs in the DWR-based Intervention sessions. It became obvious to me, especially through informal feedback, that the object of the MUGs activity system in the DWR-based Intervention to engage more with Moodle also existed in other schools. This signifies a potentially shared object in that the need that first arose in the DWR-based Intervention was reflected in the wider institutional context through the discourse artefact I had with various lecturers from other schools. The collaboration that subsequently developed between Claire and Matt addressed that need by scheduling Moodle training sessions of which all lecturers across

ITWI could avail. This signifies a change in the division of labour: the lecturers, by expressing their demand, were taking responsibility for organising their own Moodle training with Matt outside of the official organisational channels for the provision of technology training. This provision of Moodle training across ITWI was a direct result of the DWR-based Intervention. This additional training was organised and structured by Claire and Matt's collaboration and remained independent of the Computer Services Department, which has responsibility for formal IT training at ITWI. This is an example of an activity that was shaped by the nature of the DWR-based Intervention as a bottom-up initiative (Engeström, 2001b).

A salient point in the nature of the transformation that was taking place in the lecturers' pedagogic practice as the impact of the DWR-based Intervention moved through ITWI is the importance of both the cognitive and the affective dimensions. Daniels (2011) notes that a surprisingly large amount of the research conducted under the banner of the cultural historical tradition remains overly cognitive. He further states that the shifting and developing object of an activity is aroused by a motive. In this study, I noted that the shared object of the lecturers' activity was to engage with Moodle to improve lecturers' pedagogic practice.

It is useful to further explore my reasoning behind introducing Claire and Matt especially as, at that point, I did not believe it fell within the bounds of my study. The motive behind my action was interesting and largely twofold: (i) as a doctoral researcher I was interested in the creative potential of the object of the MUGs activity system throughout the wider context of ITWI, and (ii) as a lecturers in ITWI I noticed a similar need and frustration in lecturers from other schools to engage with Moodle in a manner similar to the MUGs group. This is a representation of the inseparable relationship between situation, motive, emotion and understanding, as put forward by Yaroshevsky (1989). I would argue that my motive as a researcher comprised both cognitive and affective dimensions. This was an action that, while relatively short-lived, had the effect of facilitating the evolution of new activity systems over time. The action was

cognitive in that it shows an understanding of the need for lecturer training in Moodle and having a knowledgeable expert who could provide that training. But it was also affective in that is shows my understanding of lecturers' frustration in their low level of engagement with Moodle. The importance of the relationship between cognitive and affective dimensions of learning is considered by Minick et al. (1993, p. 6), who suggest that

> significant human interactions do not involve abstract bearers of cognitive structures but real people who develop a variety of interpersonal relationships with one another in the course of their shared activity in a given institutional context.

This represents the situation in my study. The interpersonal relationships which developed between me (as the researcher), the external expert, the project manager and various individual lecturers who approached me informally served to satisfy the need for Moodle training which encompassed both cognitive and affective dimensions. This also aligns with Daniels' (2010b) suggestion that modes of thinking evolve as integral systems of motives, goals, values and belief which are closely tied to material forms of social practice, as I noted how my own thinking evolved as I worked through the study.

Claire and Matt assumed responsibility for organising Moodle training across the Institute. In activity theory terms this is an example of the expanding nature of the MUGs activity system. It is an unexpected outcome of the collaborative events that arose from the activity system in the DWR-based Intervention. Matt remarked on the connection between him and Claire:

> Once we became aware of each other, for want of a better term and expression…and that was a direct result of the MUGs [*referring to the DWR-based Intervention*]. But, once we became aware of each other, a lot of activity started happening […]. I was able to raise awareness of other initiatives going on in other colleges and set up links there. So, it was a direct benefit, a direct result of the MUGs, but completely separate.
>
> (External expert interview, November 2011)

The external expert attributed the origin of "a lot of activity" to the DWR-based Intervention in the Business School. This illustrates the interconnected nature of

the MUGs activity system and other activity systems in the wider institutional context. A significant amount of interest was generated by the DWR-based Intervention sessions that spawned a demand for Moodle training in other schools. As such, we can look at the DWR-based Intervention as a catalyst for change. Claire made the following comment when I asked her if she saw an impact of the DWR-based Intervention in the wider organisation beyond the Business School:

> Yes, I saw an impact. You could see from that [*referring to the DWR-based Intervention*], other people wanted to get involved. The word on the street was out there, through the outputs, I suppose. […] it took a couple of, well, about three sessions. When it moved into the third session and other people began to talk about it—who had participated and shared—and it became a coffee-morning discussion, so that encouraged more people, and it influenced more people to get involved. Once people joined up they could see the benefits straight away, and it trickled from there, and it began to spread out, and what happened was a new user-group had to be established to cope with the demand of the…to cope with the demand that had grown, and from that further user groups had to be developed. They weren't like your close MUGs, but they were getting to learn Moodle […].
>
> (Project manager interview, June 2012)

As a result of the Moodle training which they organised, Claire and Matt learned of the lecturers' needs for Institute-wide education in teaching-related technologies across ITWI. In the extract above Claire comments on how the DWR-based Intervention became a "coffee-morning discussion", which indicates the widespread interest, as she infers, in becoming involved in something similar. She subsequently used the word "trickled" to describe how more people learned of the work of the initial MUGs group in the Business School, indicating a slow but continuous flow of information at grass-roots level. The information was passed to lecturers largely by word of mouth. I further noted that the connection formed between the researcher, the external expert and the project manager was crucial. It facilitated the creation of other activities outside of the DWR-based Intervention, which was the primary focus of my study. Relational agency provides a useful way of analysing the importance of this connection. Edwards (2005, p.172) describes relational agency as

> a capacity to work with others to expand the object that one is working on and trying to transform by recognizing, examining, and working with the resources that others bring to bear as they interpret and respond to the object.

In this study it was the ability to recognise the value that could be added by following the expanding object of the lecturers' activity system through the support of the external expert. That value added was explained by Matt when asked if he was aware of any impact of the DWR-based Intervention on the wider context of ITWI:

> What ended up happening was, when I came in to do the MUGs—do the Business MUGs [*referring to the DWR-based Intervention*]—I was then introduced to another individual within the college, a lady called Claire Ganty, who approached me to see would I be willing to do more sessions for other staff, not necessarily members of the Business Department. So, that was an immediate knock-on effect, and then following on from that there was the introduction of the LIN modules, the technology-enhanced learning modules, and I conducted my own evaluation on that and how that has worked. But that has had a huge knock-on effect across the college, because people started finding out about different bits and pieces they can do, people started talking about their teaching, talking about the technology and how they use it, and I believe the MUGs were the platform to kick-start that conversation.
>
> (External expert interview, November 2011)

Recognising and ensuring that participants have access to the object motives of their collaborators is central to relational agency (Edwards and Kinti, 2010). The structure of the DWR-based Intervention, coupled with the introduction of Matt to the process, ensured that the motives, belief and perceptions of all the stakeholders were revealed. Matt describes the "knock-on" effects of the Business MUGs (i.e., the DWR-based Intervention group), and he mentions the LIN modules (Learning Innovation Network (LIN) is the network of academic professionals from higher education that support academic professional development (APD) for staff in the Irish higher education sector, particularly the institutes of technology). He emphasises how people started talking about their teaching practice and about related technologies. This informal conversation suggests the power of word of mouth within ITWI, as exemplified in Claire's

comment about people talking over coffee. As a result of this observation, Claire and the Matt organised the delivery of a structured, taught module for lecturers that was delivered across one semester. The module was titled *Technology-Enhanced Learning* (TEL), and it successfully ran at the Institute for four semesters. Claire commented on the Institute-wide interest in the module:

> The MUGs user group, they were the first people that took on the teaching and learning module. There was great enthusiasm and support to do the TEL module. And obviously the MUGs user group were very enthused to do more. They were [the] people actually who were the first people that took on the TEL module when we put it out there to the college. All the MUGs, people who had been part of the [non-DWR] MUGs user groups, were the majority who took up that TEL module, which was interesting. But even from that, that led to […] people coming back [and saying], "I want to do more". They had a taste and an appetite for developing learning and teaching […], but that would have come through all of this network.
>
> (Project manager interview, June 2012)

In this extract Claire explains the interest that was generated among lecturers from all schools across ITWI in voluntarily undertaking the *Technology-Enhanced Learning* module in their own time. The module was organised by Claire and delivered by Matt. Interestingly, Claire spoke of how the original MUGs group, those from the DWR-based Intervention in the Business School, were the first to express an interest in taking the module. She further adds that "people who had been part of the MUGs user groups" (referring to non-DWR MUGs) were among the majority of those who took the module. While these events took place subsequent to, and separate from, the DWR-based Intervention in the Business School, they would not have happened without this Intervention. Claire saw that the Intervention generated interest in individual schools in having their own Moodle training. The collaboration between Claire, Matt and me ultimately satisfied the demand that had grown among lecturers for further education in technology-enhanced learning. The path of events that led to the delivery of the *Technology-Enhanced Learning* module can be traced back to the DWR-based Intervention. In activity theory human learning is mediated by cultural tools. The networks that were established through the various complex interactions of individuals were mediated by tools, particularly language, i.e., the discourse artefact. In this study we can see that when people encountered an object—engaging with Moodle, for

example—they did not interact with it directly, but through the mediation of tools which were also used by others. For example, upon hearing of the DWR-based Intervention (another kind of tool) and how the MUGs were engaging with Moodle, other lecturers also wanted to partake in a similar activity in which they could also engage with Moodle. Activity theory provides the ability to look beyond the individual learner to understand the social and material relations that affect complex human learning and peoples' interactions, mediated by both technical and psychological tools. I noted that as people expanded their involvement with others in the community by enquiring about how the MUGs were working with Moodle, they were changing and learning. From this perspective learning is first social, as suggested by Russell (2002), in that what appears initially in the social or interpersonal plane may then be internalised and appear on the cognitive or intrapersonal plane. Later, it may also be externalised in future social activity, leading to further change and perhaps learning. This, according to Engeström (1987), is learning by expanding. I discuss this in more detail in section 6.4 below.

Engeström (1999c, p. 381) talks of the "creative potential" of activity, which he sees as related to the construction and definition of the object. I argue that this is evidenced here in the creative potential of the outputs of the DWR-based Intervention MUGs activity system. This creative potential manifests itself in the form of a development-promoting network where the participant lecturers got involved in taking the *Technology-Enhanced Learning* module, as stated above. We saw in chapter four that the DWR-based Intervention recorded multiple objects in that activity system, one of which was the participant lecturers' desire to develop Moodle competency in order to ultimately improve their pedagogic practice. As a result of the connections made between the external expert, the project manager and the researcher, we can see an extension beyond the singular activity system of MUGs (the DWR-based Intervention participants). As the project manager stated: "that would have come through all of this network". In this context she referred to the connections made between these three actors as a "network". This facilitated transformation of networks of activity in the form of both Moodle training sessions across the Institute and the delivery of a semester-long, assessed module for lecturers' professional education.

Engeström (1999c) sees interventions as enabling the construction of new instrumentalities, which is the case as it arose in this study. The Moodle training organised across schools and the delivery of the *Technology-Enhanced Learning* module were new instrumentalities. What we see here is humans determining or mastering themselves through their own creativity, which they externalise to transform new forms of activity both at the individual and collective levels (Engeström, 1999a); it is an example of human agency. I would argue that I, as a researcher, crossed a boundary in this study by facilitating the connections between Matt and Claire in ITWI. This had the unpredictable effect of enabling the provision of Moodle training to satisfy the demand that arose Institute-wide. As Engeström and Sannino (2010) suggested, when collective activity systems, such as organisations, need to redefine themselves, nobody knows what needs to be learned. This explains the unpredictable nature of expansive learning. In this instance the lecturers "determined themselves" by expressing their demand for Moodle training and by also signing up to undertake the *Technology-Enhanced Learning* module (Engeström, 1999b). We can see how the unfolding of object-oriented cooperative activity of these actors resulted in the emergence of concrete work processes. Engeström (1999b) asserts the potential for activity theorists to explore such cooperative activities. A significant feature of this study is that these resulting cooperative activities were not the core focus of the DWR-based Intervention but were more like "spin-offs" or random effects; however, their institutional impact was significant. These activities were ongoing while I concentrated on the DWR-based Intervention, but, as the researcher, I continually observed the evolving process.

Activity theory provides a lens through which we can observe transformation of the object within the activity system under study. Furthermore, in this instance, it was also valuable to analyse how the actions of one subject (the researcher) involved in a transforming activity system could serve to instigate transforming effects on other activity systems. In activity theory terms the object transformed the subject (the researcher). However, this transformation is dependent on other significant actors taking up the challenge; in this case, Matt and Claire. They, in

turn, facilitated a further transforming effect in other activity systems beyond the one of primary focus in this study. The connection and collaboration of the significant actors formed a chain of events that broadened the object of the activity system under study. It is worth mentioning that activity theory demands that instances of participation in the world should be the object of study, i.e., research should be directed towards the real life activities in which people engage. This includes motives, objects and the outcomes that drive people and the social and cultural relationships amongst groups of people (Jonassen, 2000). We know that activity systems are multi-voiced in that they incorporate multiple perspectives from participants who bring their own unique personal histories into new social contexts. As Blin (2004) reminds us these personal histories contain our own thoughts, beliefs and experiences which influence us as we take action and make meaning in activities. Thinking of this in the context of Engeström's (1987) triangular formation, we can see that the transformation under study is not one directional, i.e., the subject transforming the object; rather, the object can also transform the subject. In this study I was also transformed in my motive to facilitate one learning activity to connect to wider activity systems. This also shows the ongoing dynamic relationship that exists between system components or elements. The use of activity theory reminds me of how the DWR-based Intervention acts as a meditational tool which I believe shaped my own transformation as well as that of the other participants.

Edwards (2007) further describes relational agency as the ability to give support and to ask for support from others. Additionally, it temporarily shifts the focus from the system to joint action within and across systems and the impact on those who engage with it (Edwards, 2010). The collaborative effort of the significant actors in this study comes in to focus as the catalyst that generated the capacity for further collaboration and, therefore, learning within the context of interest. Relational agency illuminates how Matt and Claire, by aligning their thoughts and actions, were able to interpret the demands generated by the DWR-based Intervention and subsequently respond to those demands. This enriches the activity theory interpretation of expansion of the object. Edwards (2007) also argues that relational agency leads to an enhanced form of professional agency,

which is what emerged in this study for the lecturers who participated in the DWR-based Intervention and in the Moodle classes within the wider institutional context.

6.4 Institute interest in MUGs – expansive learning

A further interesting observation was noted on the impact of the DWR-based Intervention when the higher management in ITWI became aware of this study. I noted in section 6.3 above that although it was possible to observe the movement in the object of the lecturers' activity system, the work of significant actors was an essential requirement to sustain this movement. What I observed can be explained using the concept of expansive learning, as defined by Engeström (1987). Expansive learning is a type of learning based on collective transformation, experimentation and design of new activities with the help of the analysis of their contradictions. I observed expansive learning firstly within the MUGs activity systems and secondly in the results of its Institute-wide impacts. In relation to the modern workplace, Engeström (1987) talks of "grey areas" or a "no man's land" which, he suggests, are created because of the increasing complexity of work processes where no one quite masters the work activity. At the beginning of this DWR-based Intervention, I noted that the lecturers could have been considered to be in a "no man's land" with regard to mastering the use of Moodle in their teaching practice. I discussed in chapter four how considering the use of Moodle required the lecturers to rethink their pedagogic practice. However, it emerged that nobody knew what needed to be learned or how this learning could be achieved. As one lecturer (L8) asserted when talking about how lecturers would gain competence in Moodle: "[…] we don't know".

In chapter four I showed how the lecturers collectively remodelled their activity and engaged with Moodle through a collaborative process of discussion and negotiation facilitated by the DWR-based Intervention. The learning in the lecturers' activity system was triggered by the need to master the technology Moodle, but it also went beyond that because, as the primary contradiction in the lecturer's activity system suggested, the lecturers were concerned with how they might develop an appropriate pedagogic practice for the twenty-first century.

This is expansive learning; it is learning for a future form of activity and seeking new knowledge.

In my analysis of the wider institutional impacts of the DWR-based Intervention, I can also see a representation of expansive learning. As Yamazumi (2009) asserts in discussing expansive learning, while partnerships and alliances are necessary to expand the use-value in an activity's object, they are also very difficult to sustain and manage. This occurred in my research when the object travelled beyond the initial activity system of MUGs in the DWR-based Intervention. To some extent the collaborative work of Claire, the project manager, addressed this challenge of sustaining the object's movement. Awareness was created throughout ITWI by Claire's work when she acted on the demand that arose for Moodle training as a result of the DWR-based Intervention. I observed that while the DWR-based Intervention sessions were ongoing (February 2010 to December 2010), management and staff at ITWI were preparing for an institutional review to examine the academic processes and procedures within ITWI. This review was carried out by an expert panel appointed by HETAC, the qualifications awarding body for third level educational and training institutes outside the university sector in Ireland. A report on this review was published in March 2011. The Registrar at ITWI requested that I write a position paper documenting the preliminary findings of this study for this institutional review. Having written the report I had a discussion with the Registrar and informed him of the work involved in the research and the early findings. I noted that the Registrar was both interested in, and supportive of, my research work (field notes, June 2010). I also noted that at this point ITWI had one staff member, Diane, who was responsible for Moodle training across the entire Institute. Crucially, in September 2010, Diane accepted a full-time lecturing position that she had previously held within ITWI. Diane had worked in Computer Services for the previous seven years, four of which were spent providing Moodle training and support for the Institute. Therefore, from September 2010 to September 2011, ITWI did not have a staff member in the role of Moodle trainer. There was one member of Computer Services who provided technical and administrative support, but no training. I observed that

during this time period Matt continued to provide Moodle training and also delivered the *Technology-Enhanced Learning* taught module for lecturing staff. In September 2011, ITWI created and filled the role of technology officer within the Institute with responsibility for teaching technologies, including Moodle training.

The Registrar at ITWI recommended that the new technology officer and I should have a meeting in order for the technology officer to learn of the work of the DWR-based Intervention in the Business School. The technology officer sought to understand how the MUGs group had been formed and how the participant lecturers successfully gained competency in Moodle and also developed an interest in other teaching-related technologies. This indicated that the higher management at ITWI were aware of the wider impact of the DWR-based Intervention and were interested in taking it up as something that could have the potential for further development on an Institute-wide scale. This suggestion was further confirmed and illustrated in the following comment during an interview I conducted with Claire, the project manager:

> **Project Manager:** […] The outputs of the SIF project [*referring to her own project work*] would have led to the momentum to set up a CED [Centre for Education Development] for the Institute, which was great […].
> **Researcher:** Do the CED have any interest in MUGs?
> **Project Manager:** Yes, it is definitely an objective within the group to develop this further. There's a…it was, you know, a major success story, what had been done, and it is seen now as an objective to translate that and to move that across the Institute and to develop that further […].
>
> (Project manager interview, June 2012)

Claire's comment shows a concrete move on the part of the higher management in ITWI to take the learning from the DWR-based Intervention and utilise it to develop practices across the wider context of the Institute. The fact that the higher management at ITWI took an interest in the DWR-based Intervention was significant on a number of levels. Engeström (1987) talks about the societal nature of work processes and their complexity; he states that when work processes go through periods of intensive change, initiatives and determined action from any level of the corporate hierarchy "may have unexpected effects". I

argue that this was the case with the unexpected impacts of the DWR-based Intervention, which was a grass-roots initiative in that it arose from the lecturer level of the organisational hierarchy. The Intervention was carried out in one school of a multi-campus environment. But, as I have demonstrated, it had what Engeström calls "unexpected effects". I argue that the unexpected effects occurred largely because of the cooperative work with other actors who were external to the context in which the DWR-based Intervention took place. These effects took place in the wider context of the Institute. When activity systems such as work processes and organisations need to redefine themselves, as was the case with lecturers engaging with Moodle, traditional modes of learning are not enough (Engeström and Sannino, 2010). I would argue that the management of ITWI viewed the work of the DWR-based Intervention as a possible model for developing lecturers' Moodle competency on an Institute-wide scale. This is evidenced in Claire's comment about the DWR-based Intervention: "it is now seen as an objective to translate that and to move that across the Institute and develop that further". Engeström (1999c) proposes expansive learning as a theoretical lens through which to understand how the design of a new activity and the associated acquisition of required knowledge and skills are merged. In this study the concept of expansive learning serves to illuminate how lecturers re-imagined their pedagogic activity and took action to find ways of engaging with Moodle.

6.5 Movement of the object – powerful tools and interconnectedness

Engeström and Sannino (2010), in talking about the future challenges for activity theory, warn of the danger of splitting the theory in a way that would separate the cognitive and affective dimensions of human activity. He posits that theoretical and empirical efforts are required to connect and integrate the two dimensions. The following extract from Engeström and Sannino (2010, p. 21) serves as a useful point of departure for the next section:

> The ultimate test of any learning theory is how it helps us to generate learning that penetrates and grasps pressing issues that humankind is facing today and tomorrow. The theory of expansive

> learning currently expands its analysis both up and down, outward and inward. Moving up and outward, it tackles learning in fields or networks of interconnected activity systems with their partially shared and often contested objects. Moving down and inward, it tackles issues of subjectivity, experiencing, personal sense, emotion, embodiment, identity and moral commitment. The two directions may seem incompatible. Indeed, there is a risk that the theory is split into the study of collective activity systems, organizations and history on the one hand and subjects, actions and situations on the other hand. This is exactly the kind of split the founders of activity theory set out to overcome.

I would argue that the empirical work in this study moves towards understanding the integration of which Engeström speaks in this extract. It grasps a pressing issue facing lecturers in their pedagogic practice today, that of engaging with technology in their teaching environments. In the previous three sections I examined how flows from the DWR-based Intervention created connections with other activity systems. It is necessary to further analyse the importance of these peripheral activities in activity theory terms in order to understand how they embody the two directions which are of concern to Engeström and Sannino (2010). We can think of the DWR-based Intervention as an accelerator of the learning process, in that the participant lecturers were engaged in developing their knowledge and skills in Moodle. The enquiries about the work of the Intervention were from other lecturers outside the MUGs activity system who had not had the accelerated learning experience. From this we can see that the outcomes of the DWR-based Intervention became tools for other activity systems. While those outside of the DWR-based Intervention did not go through the Intervention process, they did have the benefit of engaging with the external expert through organised Moodle training classes. These classes served as a tool for those lecturers. This is an example of a tool that emerged as a result of the DWR-based Intervention, i.e., an example of an outcome of one activity system becoming an input for another. The lecturers' engagement with Institute-wide Moodle training provided by Matt illustrates the existence of an object that was partially shared with the participants of the DWR-based Intervention. This, in Engeströmian and Sannino (2010) terms, is expansion up and outward, i.e., where there is evidence of learning having taken place in interconnected activity systems.

I would argue that the delivery of the *Technology-Enhanced Learning* module at ITWI was also a tool that resulted, albeit indirectly, from the activity system where the DWR-based Intervention took place. This taught module served as a tool for participant lecturers from across ITWI to both develop their knowledge of teaching-related technologies and also to interact with other like-minded individuals. It is another example of expanded learning across a network of interconnected activity systems. Furthermore, the discourse that took place between me (the researcher), Matt (the external expert) and Claire (the project manager) also served as a tool with which to connect to peripheral activity systems. In Vygotskian terms it was a meditational tool. While the object in these related activities was initially about developing Moodle competency, using activity theory enables us to see how issues of change in the elements of rules and division of labour also arose. The rules issue arises when we examine how the provision of training was brought about by the lecturers' actions to serve their own training needs. The findings show how lecturers worked outside the formal structures in ITWI and that the division of labour was changed by the introduction of an external expert in the provision of Moodle training to groups of lecturers in their own schools. The use-value of the outputs of the DWR-based Intervention as tools for peripheral and interconnected activity systems facilitates an analysis of the expansive learning that took place across ITWI.

Engeström and Sannino's (2010) concern for the other direction of analysis of expansive learning, which he calls the movement down and inward, is also illustrated in this study. The willingness of the participants to partake in the DWR-based Intervention sessions and commit to improving their professional development on their own time is significant. It represents an embodiment of subjectivity and a desire for personal advancement in their professional setting. Having examined the unexpected wider institutional impacts from the Intervention, we can see how others in the organisation also displayed the same personal sense and moral commitment when they subsequently voluntarily attended the semester-long taught *Technology-Enhanced Learning* module. The lecturers' object to develop skills related to teaching technology, both shared and

personal, is manifestly a down and inward movement. But, when examined subjectively, it is compatible with the up and outward movement of the object, as noted in the flows to interconnected activity systems. They are integrated as part of a comprehensive understanding of the interconnected activities that unfolded in this study. This serves as an illustration of the compatibility and integration of Engeström and Sannino's (2010) two directions.

Matt made an interesting observation that I would argue further illustrates both the necessity and the ability of this study to integrate the bi-directional nature of Engeström and Sannino's (2010) expansive learning. He stated:

> It really showed when it came to the LIN conference—which is the Learning Innovation Network conference—the first year after we had the MUGs. The highest representation of any college came from ITWI, with the majority of them being the MUGs. That's a real example of how it benefits and a physical metric that can be used.

In this extract Matt uses MUGs as an encompassing term for all those whom he worked with at ITWI, either as part of the DWR-based Intervention, afterwards in other Moodle classes as a result of the Intervention or during the *Technology-Enhanced Learning* module that he delivered at ITWI. His comment on the high attendance of lecturers at the national conference is interesting from the point of view of Engeström and Sannino's (2010) disquiet about the risk of a split in activity theory's focus. This high attendance of ITWI lecturers at the conference was an indirect result of the DWR-based Intervention and its random effects, which illustrates learning in both directions: (i) up and outward—the interconnectedness of the collective activity systems through their shared object; the interconnectivity Institute-wide and beyond; and (ii) down and inward—the subjectivity of individuals who voluntarily travelled to the conference to further enhance their own professional development. Lecturers' interest in teaching and learning technologies was developed as a result of the DWR-based Intervention and its wider effects. This supports Mac Labhrainn (2010), who suggests that the transformative effects of technologies can be subtle in its contribution to professional development. I observed that as lecturers advanced their Moodle

competencies they generally became more interested in technology-enhanced learning.

This section has illustrated how the object of the MUGs activity system was identified as a shared object which, through its self-movement, generated the potential for expansion. This expansion came about when significant actors from other interconnected activity system collaborated and acted upon the object's creative potential in opening up opportunities for expansion. These actors enabled the expansion of the object by giving it direction and shaping it as the movement continued. This is expansive learning as transformation of the object.

6.6 Boundary crossing and trails

The movement and learning activities outlined in the previous section can be traced back to the DWR-based Intervention at the beginning of this study. According to Engeström (2004, p.4) expansive learning is "intertwined with horizontal or sideways movement across competing or complementary domains and activity systems". Daniels et al. (2007a, p. 139) further states that

> expansive learning processes in interagency settings are predicated upon horizontal movements, wherein mutual learning takes place through the shifts and tensions that occur when professionals from different backgrounds collaborate.

Daniels et al. (2007a) in their study, referred to professionals from different schools, art galleries and museums as an example of interagency collaboration. However, in my study, while the professionals all work in ITWI, I would argue that they also come from different backgrounds embodied in the Institute, for example, Business, Humanities, Science, Engineering and Computer Science. I observed that ITWI is a setting that may embody interagency collaboration. Daniels et al. (2007a) reference to a horizontal dimension of learning—where learning takes place across boundaries—is also illustrated in this study. The random effects of the Intervention spread sideways and horizontally across the Business School, where the DWR-based Intervention took place, and also across other schools and campuses in the wider institutional context. Boundary

crossing occurs because human beings are involved in multiple activities and have to move between them (Engeström and Sannino, 2010). Several boundaries have been crossed between schools and campuses in this study. While lecturers had Moodle training within the confines of their own schools, lecturers from different schools crossed boundaries and came together in the *Technology-Enhanced Learning* module and at the LIN conference. This enabled lecturers to collaborate in a way that had not happened before; as Matt commented:

> […] people started finding out about different bits and pieces they can do. People started talking about their teaching, talking about the technology and how they use it, and I believe the MUGs were the platform to kick-start that conversation.
>
> (External expert interview, November 2011)

I contend that generating a "conversation" among lecturers, as Matt describes it, is one way of transforming learning culture in ITWI. This resonates with Wenger (1998), who discusses boundary encounters, such as meetings, conversations and visits, as single or discrete events that provide connections. As Daniels et al. (2007a) suggests mutual learning takes place through the shifts and tensions that occur when professionals from different backgrounds collaborate. This is illustrated by the horizontal movement of information that took place in this study, as "people started talking about their teaching, talking about the technology". The process of expansive learning was based on the horizontal movement of information that occurred. This horizontal movement and the learning involved can be traced back to the DWR-based Intervention.

Engeström and Sannino (2010, pp. 312-313) describe the landscape in which humans conduct their activities as "a terrain of activity to be dwelled in and explored". If we consider the actors in the context of this study as "dwellers" and "explorers", they interact with the environment and each other to create multiple and intersecting trails. Explorers come to understand the terrain by movement through it in different directions. Similar to Cussins' (1992) concept of cognitive trails, wherein he suggests that movements of information creates traces or trails, our movement through this terrain is described by patterns and directions of motion representing activity which is simultaneously cognitive (in the mind),

physical (in the world) and discursive (in the social space). From an activity theory perspective this is how networks of activity systems are created, i.e., when actors expand the object of their activity system through collaboration. Matt exemplified this when he spoke of how he saw the lecturers learning through the sessions that emerged across ITWI as a result of the DWR-based Intervention:

> People don't know what they don't know, right? So, when they come to sessions like this, you kind of light a spark with them, and that's what those sessions did. They light a…they start getting confidence to go beyond the stuff they have been told, […] they will expand it beyond the scheme of what I have taught them […]. It lights a spark, and you can go in so many different directions; word of mouth is phenomenal.
>
> (External expert interview, November 2011)

Here Matt talks of how the Moodle sessions "light a spark" for lecturers, which gives them the confidence to develop their knowledge and thus their practice beyond the context of that particular session. This concept aligns with Knorr Cetina (1999), who used the term "confidence pathways" to describe how knowledge was mobilised and passed between professionals based on mutual trust. Edwards and Kinti (2010) further uses the term "confidence pathways" to explain how practitioners use professional collaborative meetings to gain information and support which they know will be useful. Arguably, Matt's description of the lecturers' experience of how they used the sessions to gain the confidence which enabled them to subsequently pass on information to colleagues in informal settings suggests a similar development of "confidence pathways".

6.7 **Chapter summary**

Chapter six presented an analysis of the wider institutional impacts of the DWR-based Intervention carried out in this study. The evidence of the wider effect of the Intervention illustrated the movement in the object of the activity system. Collaborative learning possibilities and challenges were demonstrated in the analysis of the movement of the object of the MUGs activity system. The evidence presented in this chapter of the unintended consequences of the DWR-based

Intervention accords with Engeström's notion of expansive learning. New and shared objects emerged as a result of the interaction of multiple activity systems. Engeström and Sannino (2010) see breaking away and boundary crossing as two potential mechanisms that might stimulate work in activity theory studies of development. In this chapter I have demonstrated evidence of both these mechanisms. Lecturers broke away from the notion that in-house training was their only possibility for gaining Moodle competency. This occurred through movement of the object of the MUGs activity system and the subsequent interaction of multiple activity systems. Boundary crossing was evident in my action of connecting the external expert with both the SIF project manager and lecturers in different schools outside the Business School where this study was focused. The chapter also demonstrates how the study addresses the challenge of ensuring that activity theorists do not split their research into two fields, one looking at the cognitive and the other looking at the affective dimensions of human functioning in an activity. This study attempts to look at the integrated nature of both these elements.

7 Chapter seven: Discussion

7.1 Introduction

In chapters four through six I presented an analysis of the data collected during this study at three different levels. I firstly conducted an activity theory analysis at the level of the Business School, where I based the DWR-based Intervention. I secondly extended this activity theory analysis by using Bernstein's classification and framing model. This extension included a focus group from the FDT School. I thirdly conducted an activity theory analysis on the wider institutional impact of the DWR-based Intervention. In this chapter I discuss the findings from each of these levels and draw them together to examine how they contribute to answering the research question underpinning the study: what is the relationship between cultural context and engagement with the VLE Moodle? I focus on the main issues which emerge from the study and discuss them in the light of the relevant literature. I begin this chapter by re-emphasising my interpretation of cultural context in this study. Following this, I discuss the main findings of the study: (i) collaboration, (ii) affective issues and (iii) influence. Finally, I consider some peripheral findings which also emerged during the course of the study.

7.2 Cultural context

The research question in this study asks if cultural context impacts on engagement with the VLE Moodle. Drawing on Cole (1996) I interpret culture as a medium through which individuals use artefacts and tools, including language, to develop ideas. As individuals partake in human activity, they adopt and create culture through the mutual shaping of themselves and the tools they use. Further influenced by Cole's (1996) work I interpret context as that which connects individual parts to form a cohesive whole. CHAT orients us to identify context as a socially, culturally and dialectically constructed world; it weaves individuals with others and tools, thereby forming a network of socio-cultural interactions and meanings. Thus, learning and the development of the human mind is understood in the context of culture where mediation is carried out

through cultural artefacts. In this study cultural context is interpreted as the setting in which lecturers operate daily, using psychological and technical tools in their pedagogic practice. The DWR-based Intervention began in the cultural context of the Business School in ITWI.

The Context

The Business School has a Head of School, a Head of Department of Management and a Head of Department of Accounting and Information Technology. It has 35 full-time lecturers who work across both departments with skills and experience in a wide range of business disciplines. The school has approximately 1000 students studying at undergraduate, postgraduate and professional level. The School offers the following undergraduate honours degrees: Bachelor of Business, Bachelor of Business in Accounting, Bachelor of Business in Rural Enterprise and Agribusiness, Bachelor of Arts in Information Systems Management and Bachelor of Arts in Human Resource Management (flexible delivery). The School also offers a postgraduate diploma in accounting and Association of Chartered Certified Accountants (ACCA) professional qualification.

By intervening in the lecturers' practice I gained insights to the impact of cultural context on their use and appropriation of Moodle; this serves to answer the research question. An important point about the context of this study is that it was carried out in an institute of technology. In the Irish higher level education context, teaching is the primary focus of lecturers in an institute of technology, and a tradition of scholarship does not exist (basic research and publication by academics), whereas in the university sector the primary focus is generally on research (Palmer, 2009).

7.3 Main findings

The findings in this study reveal that cultural context did impact on lecturers' engagement with the VLE Moodle. These findings centre on three main themes that comprehensively reflect my analysis of the data: (i) collaboration, (ii) affective issues and (iii) influence.

7.3.1 Collaboration

I found that learning and change take place when there is a joint collaborative effort in a complex learning environment—one where lecturers are loosely connected and working in highly individualistic roles. When adults are learning something new that significantly changes their practice, the importance of collaboration for learning emerges. I found that facilitating a collaborative effort in a highly individualistic context enables the identification of crucial contradictions that impede the implementation of new forms of learning and practice; it is potentially a powerful tool in instigating change.

Activity theory, as developed by Engeström (1987), provides a multi-dimensional lens through which to understand collaborative activity (see section 2.23). I found that it is a valuable framework which acknowledges the importance and influence of the context in how the lecturers collaborate with one another. Similar to other studies (Lindgard, 2007; Blin and Munro, 2008), my findings reveal that a lack of support for academics in adopting teaching technologies is an inhibiting factor. While the VLE Moodle can be viewed as a mediating material tool in the lecturers' context, what emerges is the more pressing need for a psychological tool to facilitate lecturers' collaboration and thus support their adoption of the material tool (Moodle) in their practice.

I found that employing a DWR-based intervention enabled the formation of such a psychological tool—a strongly bonded group which became known affectionately as the MUGs (Moodle User Group). The findings reveal how the group bonded and provided collegial support to each other through a dialectical process, which supports the findings of Niesz (2007) and Cross (2010) (see section 2.23). This Intervention facilitated the lecturers in becoming reflective practitioners who collectively assessed their Moodle experiences. Although this emerged organically in the study, such a practice is advocated by Kirkwood and Price (2013) when considering the integration of teaching technology with pedagogic practice. This emphasises the importance of collaborative relations and interactions among lecturers in order for learning and professional

development to take place. In activity theory terms this finding represents a shift in the division of labour as the MUGs group took responsibility for their own Moodle training, with different members assuming responsibility for different tasks as they developed their Moodle skills**.** Furthermore, a shift in the rules occurred when the MUGs participants—who rejected the generic Moodle training at ITWI—worked with an external expert who, at their request, was introduced through the DWR-based Intervention. This shows how the lecturers broke away from a dilemmatic and contradictory work situation through the expansion of objects, tools, rules, community and division of labour, as proposed in Engeström's (2007c) theory of expansive learning. This finding contributes to the discussion on the use of TEL in higher education in which the prevalent view (Bates and Sangra, 2011; Schneckenberg, 2009) is that higher education institutes struggle to integrate ICTs into their pedagogic practices. My findings suggest that the technology itself may not be the core issue in this struggle; rather, the cultural context may play a significant role. This finding also supports recent findings in a UK longitudinal study on the use of TEL (Walker et al., 2012) which suggest that departmental/school culture is a potential barrier to lecturers' uptake of teaching technologies.

Additionally, it is argued (Conole, 2010; Selwyn, 2011) that explorations of lecturers' engagement with TEL have predominantly focused on the technologies themselves, driven by the belief that technologies are capable of improving education. My study goes some way towards responding to recent calls (Ehlers and Schneckenberg, 2010; Oliver, 2011) to move away from a potentially technologically deterministic approach in favour of a more encompassing one, namely a socio-cultural perspective. I sought to explore lecturers' actual engagement with Moodle by going to the source and intervening in lecturers' practice in one higher education context. This approach revealed that while the tool Moodle did not pose any technical difficulties for the lecturers, it remained either absent from, or at the periphery of, their practice. The lecturers, by participating in an intervention-based collaborative effort, moved to a position of critical engagement with Moodle. I found, similar to Palmer (2009), that the lecturers' everyday work context did not afford the opportunity to participate in

collaborative work, whereas the MUGs context provided a collaborative working space where lecturers could share experiences, understandings and practice. This supports other studies, including those of Oncu, Delialioglu and Brown (2008) and Kopcha (2010), which found that when lecturers meet with colleagues who are more adept in the use of teaching technologies, they can relate the potential of the technology to their own practice: the collaborative effort enables development.

From an activity theory perspective collaboration can be viewed as object formation. Similar to other studies (Engeström, 1987; Miettinen, 1998), I found that when the lecturers engaged in collaborative discussion they identified a shared object—to explore the potential of Moodle to enhance their pedagogic practice. The collaborative context enabled the lecturers to explore historical tensions and contradictions, which in turn highlighted the shared object of the lecturers' activity. Activity theory enabled me to trace the movement in the lecturers' object throughout the Intervention. I found the shifting and developing object of the lecturers' activity system was, as Daniels (2010b) suggests, related to the motive that drove it, i.e., the lecturers' desire to explore the potential of Moodle to enhance their pedagogic practice. This finding suggests that the lecturers were more concerned with how their institutional context inhibited them in engaging fully with Moodle than with any difficulty in actually working with the technology itself, thus implying that their context impeded engagement.

My findings reveal a weakness in taking a techno-centric view of the exploration of TEL and suggest that engagement with Moodle as a meditational tool could be constrained or enhanced depending on the nature of the surrounding cultural context. The potential of human agency—something that was necessary, yet absent, from the participants' work context—is revealed through an application of expansive learning. The Intervention provided the context from which agency could be developed, thus instigating change in the lecturers' pedagogic practice. This is important as is implies that concentrating the gaze on the technological tool risks a failure to understand the tool as a mediating artefact in the

surrounding context and, crucially, risks neglecting the role of the human subject as the fundamental change agent.

The ultimate desire of the Moodle development community is for teachers to be involved with, and supported by, a community of their peers (Dougiamas, 2013). Moodle's design is based on social constructivist principles and thus based on the idea that learning is socially constructed, in that people learn from one another and create knowledge together. My findings suggest that when a tool based on such principles is deployed in a strongly individualistic context, problems can arise. From an activity theory perspective, which I have adopted in this study, we shape and are shaped by the tools in our environment. If, as Dougiamas (2013) suggests, Moodle developers wish to see teachers collaborating with their peers, through an activity theory lens we might say that the collaborative philosophy inherent in the tool design would shape, and be shaped by, those who use it in their practice. Then we could ask if teachers would be shaped by Moodle to operate in a more collaborative fashion, or would they use Moodle in an individualistic way, shaping it as an individualistic context has shaped them? Blin and Munro (2008) found that within Moodle lecturers used activities that replicated face-to-face teaching rather than those that demanded collaboration, which, arguably, reflects the lecturers' mindset. I found that lecturers in an individualistic setting had difficulties in adopting Moodle because of their mindset. Through the DWR-based Intervention they transformed how they thought and, therefore, talked about the tool, and they learned to use more features of the tool than they had done individually, including collaborative-based features. This finding suggests that the lecturers, not the tool, were the change agents. The social constructivist philosophy underpinning the design of Moodle may well be influential in shaping individuals who use it; however, I believe that Dougiamas' (2013) suggestion that Moodle shapes them toward a collaborative practice may be overly ambitious. Although it is unwise to generalise, my findings suggest that this is only likely to happen if a collaborative practice is fostered or inherent in the work setting of those who use it. Otherwise, I expect findings like Blin and Munro's (2008) to be the norm.

My findings highlight how necessary collaboration is for the participant lecturers to engage with Moodle, thus indicating that the cultural context is a determining factor. As a result of the collaborative Intervention facilitated by this study, the participants were empowered to become agents of their own learning and development. This finding supports Hargreaves (2003), who states that one of the most powerful resources that people in almost any organisation have for learning and improving is one another. Technology of itself will not determine change; rather, the individuals with the appropriate thinking who use the technology will do so. As such, it is crucial to give due consideration to context when deploying technologies in educational settings. Furthermore, as my findings suggest, an understanding of context is best achieved by exploring the beliefs, thoughts and feelings of those who inhabit it daily. In the next section I discuss my findings on the importance of the notion of affect for lecturer engagement with Moodle.

7.3.2 The notion of affect

The notion of affect is significant in the complex phenomenon of lecturers' learning and professional development. Employing an activity theory perspective and unpacking the notions of motive and object reveals the pervasive nature of emotions in the lecturers' work practice. The objects of the lecturers' activity system, including teaching, developing Moodle competencies, forming a close working group that the lecturers represent cognitively and which satisfies a particular need, became emotionally significant for the lecturers. In order to fully understand the lecturers' position in relation to their engagement with Moodle, it is necessary to take cognisance of their needs, feelings and emotions.

The data reveals participants who were angry, anxious, frustrated and dissatisfied, yet eager to improve by expressing a desire to learn more about Moodle and other relevant teaching technologies. However, I also found that they were unable to move forward with Moodle owing to their perception of the constraining nature of their individualistic work setting. This fostered a deep sense of frustration and struggle in a dilemmatic situation. This supports

Engeström's (1987) claim that individuals frequently find themselves in a "no man's land" when faced with a disturbance, often as a result of the introduction of a new technology in their work practice. This finding recalls Daniels' (2012) suggestion that the regulation of social relations in institutions has cognitive and affective consequences for those who inhabit them. The need for lecturers' professional learning emerged, as well as the need to understand its accompanying affective issues.

Crucially, the collaborative dialogic process of the DWR-based Intervention, with its intention to facilitate a critical interrogation, highlighted the integral nature of emotions in the lecturers' activity. As the object of the lecturers' activity shifted and developed during the Intervention discussions, the motive which drove it became visible as the participants developed agency and will (Engeström, 2009). This supports Engeström's (1999c) claim that questioning and criticism of existing practices is the starting point of a process of expansive learning and emphasises the importance of conflicts and dilemmas in knowledge creation.

The findings show that an application of expansive learning reveals the development of individual agency, as some of the participants changed their subject position (e.g. moving from anxiety to confidence and from helplessness to control), and also collective agency as the participants formed a strongly bonded working group. This development of lecturers' agency through collaborative practice was a powerful tool in shaping lecturers' engagement with Moodle and enabled them to overcome their perceived limitations of their cultural context. This supports the work of Edwards et al. (2010), as discussed in section (2.29). I found that in order to understand the lecturers' practical activity it is also necessary to understand the "regulating effect of emotion" (Leont'ev, 1978, p. 27), which activity theory understands as a psychological function. However, activity theory studies have not generally privileged the notion of affect. While there seems to be a concentration on the study of the structural dimensions of activity, as presented in Engeström's (1987) triangular formation, my findings reveal the need to consider how human activity embodies our emotions. Since activity theory facilitates a study of humans in their natural

settings, on the basis of my findings I argue that affective issues are always at play, even if invisibly, in these settings as they become manifest through the motives of individuals. This need for activity theory studies to pay more attention to the agentic dimensions of human activity, which include emotions, identity, morality and motivation, supports the findings of Holodynski (2013) and Roth (2009).

My findings illuminate the need to forge a link between situations, emotions and motives by revealing how lecturers make sense of the introduction of a new technological tool into their context which has the potential to change their work practice. Taking the cultural historical conception of motive, which understands emotion and cognition in a non-dualistic frame, this study supports recent arguments from Daniels (2010b; 2012) and Engeström and Sannino (2010) for the need to pay attention to how cognitive and affective features of human functioning relate to the ways in which motives and goals arise in particular situations by providing empirical evidence of the importance of both features in human activity. While my study supports the duality of cognitive and affective dimensions, it highlights the need to look more closely at the largely understudied dimension. Contributing to the field of educational technology, this finding reveals that when attempting to understand lecturers' uptake of teaching-related technologies, searching under the technological or cognitive lamplight will not reveal the full picture; rather, we must also consider the potentially darker and messier (Selwyn, 2014) arena of the affective dimensions.

The notion of the affective dimension was also revealed in the wider institutional impacts of the DWR-based Intervention. In his study Engeström (2007a) examined the importance of identify formation, wherein he argued that practitioners somehow see themselves as taking on a new personal identity when faced with major transformations at work. Engeström (2005) referred to the "agony" that confrontation with changes in professional practice and identity may entail. Similarly, I found that lecturers were concerned about their professional status as they were anxious and worried about appearing incompetent with Moodle in front of their students and were worried about not

being able to integrate technology in a manner appropriate for the twenty-first century. The resistance to the construction of new professional identities, to which Engeström (2007a) refers, presents a challenge to the overly cognitive orientation of much of activity-theory-based research (Daniels, 2012). My findings concur with Daniels' (2012) concern for developing a theory of learning which can cater for the rapidly changing demands of our workplaces. My findings suggest that we need to incorporate the affective aspects of human functioning into what has so far been an overly cognitive endeavour (Daniels, 2012).

Crucially, lecturers outside of the DWR-based Intervention expressed a need to connect and collaborate with others in order to gain competency in the use of Moodle and to foster a more supportive atmosphere. I found evidence of the affective dimension of human functioning in the data representing the wider impacts of the Intervention. This finding supports Roth (2009), who asserts that without articulating and theorizing needs, emotions and feelings, we are hard pressed to arrive at more than a reductionist image of activity generally. Indeed, only by including these needs, emotions and feelings do we capture the activity system as a whole, thus ensuring a more inclusive analysis (Sannino, 2011). It would have been impossible to construct an activity theory analysis of both the DWR-based Intervention and the wider institutional effects without taking these essential elements of human functioning into account. As an example I draw attention to my own actions in making the connections between the external expert and others outside of the DWR-based Intervention. The question of my motive in doing so is valid. Leont'ev (1978, pp. 62-63) uses the collective activity of hunting to explain that one needs to understand the motive behind the whole activity in order to understand why separate actions are meaningful. I argued in chapter six that my motive comprised both cognitive and affective dimensions. The cognitive dimension was that the study was carried out as research towards attaining a doctoral degree. The affective dimension was embodied in the experience (Vasilyuk, 1988) I gained as a researcher in the early sessions of the DWR-based Intervention, as that gave me the ability to identify the shared object and thus empathise with lecturers from outside the Business School who approached me to enquire about MUGs. Engeström (2007) drew upon Vasilyuk's

(1988) concept of experiencing, explaining it as the ways in which human beings work out the contradictions they encounter in maintaining their activities. My own experience with the DWR-based Intervention, even in the early stages of the research, enabled me to understand later the dilemmas faced by lecturers from outside the Business School context. I was motivated to help them by facilitating collaboration with the external expert who was working with the MUGs at that time. I was also influenced by the use of activity theory. It taught and sensitized me to the belief that my own constructions—for example, my decision to make these connections—are shaped by meditational means, including my beliefs, values and personal history which includes my previous experiences, not least what I learned as I worked through this research process.

I believe that my findings in this study show that the cognitive and affective dimensions were also apparent in the motives of both the lecturers who participated in DWR-based Intervention and those who participated in the wider institutional effects. I found that the cognitive dimension for these lecturers was to gain competencies in the use of Moodle. The affective dimension was more complex; the lecturers wanted to connect with others who also wanted to improve their Moodle usage and to improve their own pedagogic practice in order to gain confidence in their professional position as lecturers. I found that while activity theory analysis enabled me to capture needs, emotions and feelings in the activity system under study, it did not offer the scope for in-depth analysis of the affective dimensions. Mindful of Sannino's (2011) warning that mechanical applications of Engeström's (1987) conceptual model of activity systems could be considered sterile representations of abstract interconnected elements, I drew on Engeström's (1985, p. 20) perspective that activity theory represents "the central elements and relations of a system to be built and implemented in time". Nevertheless, I still believe that the affective dimension requires more attention.

The strongly affective-centric findings of my study could not be fully explored within the framework of activity theory, which acknowledges the paucity of work on the same. Therefore, I complemented my analysis with the work of

Bernstein (2000), whose model of pedagogic discourse provides a way of theorizing discourse as a tool within activity theory that incorporates both instrumental and moral/affective dimensions. A focus group discussion recorded at the FDT School revealed a strong moral and affective dimension in that the lecturers naturally and collectively took control of their own learning of Moodle and displayed a sense of empowerment and confidence in doing this. This contrasted with the discursive artefact recorded at the beginning of the Intervention with the Business School participants which revealed a much weaker social order. The participants were frustrated and spoke a lot of their isolation from one another. These findings reveal how complementing my activity theory analysis with Bernstein's work allowed for a more inclusive consideration of the affective dimension.

7.3.3 The notion of influence

My findings also reveal that an activity-theory-grounded intervention in lecturers' practice facilitated them in bringing about a significant change in their work practice. The process through which the lecturers transformed their practice and their thinking in relation to engagement with teaching technologies supports Engeström and Sannino's (2010) account of how expansive learning (Engeström, 1987) may bring about transformative change in work-based activities. My findings reveal the importance of the concept of influence, which may be configured as leadership (Cuban, 1988). While activity theory encourages a focus on interactions between the elements of human activity systems (subject, object, tool, etc.), it does not place specific importance on the notion of influence. Social interactions are of crucial significance in understanding cultural contexts from an activity theory standpoint, but my findings reveal that when engaging with teaching technologies the key forms of interaction are those which influence, i.e., those that change the activities of others.

I found that the organised nature of the DWR-based Intervention sessions, in which an external expert was available to the lecturers, provided a form of leadership. Crucially, I found that the lecturers built a working relationship and strong rapport with the external expert, whose role cannot be underestimated in

influencing the creation of an environment conducive to learning and engagement, both within the structure of the Intervention and the wider institutional context. He was, as it were, the right person in the right job, who, I found, influenced the lecturers' engagement with Moodle and interest in other teaching technologies. I found that the external expert maintained contact with the participants as an informal support for technology training after the conclusion of the DWR-based Intervention, further highlighting his influential position and collegial relationship with the lecturers. While activity theory facilitates an analysis of these interactions through its notions of community and division of labour, my study reveals the need to go beyond considering leadership functions as part of a division of labour to exploration of leadership as practice and influence. My findings support the work of Spillane (2008), who finds that the notion of distributed leadership, i.e., leadership enacted by multiple players, is appropriate in education settings. My findings reveal the influence of significant interacting actors and the need for leadership to harness the transformative potential of the Intervention's wider institutional impacts. For example, they facilitated the DWR-based Intervention, the provision of Moodle training and coordinating the unexpected wider institutional impacts of the Intervention, including the delivery of the *Technology-Enhanced Learning* module and the provision of Moodle training sessions at the wider institutional level. The notion of influence configured as leadership within this study reveals that the framework of activity theory does not allow for a concentration on how influence occurs through activity. However, it supports Spillane's (2008) notion of leadership practice in educational settings as influencing organisational and instructional improvement.

The finding that influence is important in social interactions contributes to the discussion around the adoption of TEL in higher education. Scholars refer to Rogers' (1995) idea of early adopters and innovators (Kirkup and Kirkwood, 2005; Roberts, 2008; Conole, 2010) as the influential leaders in technology adoption. Although my argument is based solely on my findings in the context of this study, I offer an alternative view that the necessary leadership is not likely to come from the early adopters and innovators, supporting Lindgard's (2007)

assertion that widespread adoption is not often led by such figures. My findings reveal that the external expert developed an essential leadership role outside of his initial prescribed role as a Moodle expert. While some of the participants had a basic knowledge of Moodle at the beginning of the DWR-based Intervention, they were not willing to assume a leadership role. Having gained greater competency in Moodle through the Intervention sessions, they still displayed an unwillingness to adopt a leadership role for others within the Business School, thus emphasising the need for a designated leader.

The findings of the wider institutional effects of the DWR-based Intervention are of note. The effects can be seen as creating cognitive trails (Cussins, 1992) through the organisation as the work of the Intervention had meaning for other lecturers beyond those who participated directly in the study. This demonstrated not only movement in the object of the participant lecturers' activity system but also a shared object in the wider institutional context. These impacts emerged as horizontal and dialogical learning that creates knowledge and transforms the activity by crossing boundaries and tying knots between activity systems (Engeström, 2007b). I found that the wider-institutional impacts of the DWR-based Intervention could be interpreted through Engeström's (2007b) concept of knotworking and crossing boundaries (See section 2.24), whereby otherwise loosely connected individuals collaborate temporarily for a specific purpose, often across departmental boundaries. While other studies in educational settings (Fenwick, 2006; Martin, 2008) also consider this concept useful, I found the notion of knotworking limited in its application to my setting. This emerged because knotworking is construed as a concept where no single individual or organisation has control over coordinating an activity. But my findings suggest that in order to take advantage of the unpredictable transformative potential of the impacts of the DWR-based Intervention the need for one individual who can influence and lead further activity emerges.

Another aspect of the notion of influence arising in the data presented in this study, to an extent, supports Schneckenberg (2009), who asserts that academics tend to define their work processes more in relation to the normative system of

their disciplines than as tasks which are embedded in a coherent institutional strategy. I noted that Moodle was being used largely to reinforce traditional or existing methods, and this level of Moodle usage was acceptable as the norm within the Business School. The lecturers were unaware of any Institute or School strategy on the use of Moodle. According to Foley (2012, p. 79) the lack of a strategic direction from management in ITWI

> […] was partly a deliberate ploy, as it was felt that the growth of flexible provision should be from the grass-roots and any direction from the Institute's management should be implicit, for example, growth in the use of technology (e.g. Moodle) has been supported by the Institute rather than explicitly led by clear strategy, targets and so on.

This suggests that the promotion of Moodle in a "top down" manner is not likely to have been considered the most suitable approach. However, my findings reveal that lecturers needed leadership in adopting the technology. One fruitful way of assessing how to encourage lecturers to engage with Moodle is to gain an understanding of their cultural context. The findings show that a grass-roots approach, which arose solely as a result of an activity-theory-based interventionist initiative, was influential in helping lecturers to develop their competencies in the use of Moodle. It took place outside any formal ITWI channels and was not part of the normative system in the sense forwarded by Schneckenberg (2009). It was an innovative initiative that brought about transformational learning (Engeström, 1987) in lecturers' engagement with Moodle. Nevertheless, in order to advance lecturers' professional development the influence of the initiative was necessary and—debatably—created a new normative system for the participant lecturers. This would not have been possible without having leadership in the initiative. Furthermore, while my findings show the need for leadership in a grass-roots initiative, they also challenge Foley's (2012) assertion. Arguably there is a need for explicit strategic direction when considering lecturers' engagement with teaching technologies. This finding supports other scholars (Cosgrave et al., 2011; Blin and Munro, 2008) who argue for the embedding of TEL strategy in overall institutional strategy.

7.4 Secondary findings

In addition to the three main thematic findings discussed above, some secondary but important findings also arose.

7.4.1 The importance of Bernstein to complement activity theory

I found that in exploring the issue of transformations in the lecturers' thinking, activity theory was not sufficient in itself to conduct a deep analysis of the different elements at play in this complex phenomenon. It was for this reason that I chose to complement my activity theory analysis with Bernstein's classification and framing model. This extended the analysis presented in chapter four in a very effective way and allowed me to explore more deeply the changes that had taken place as a result of the DWR-based Intervention. Bernstein's (1996, 2000) model guided me to take measures of institutional modality, i.e., to describe and position the discursive and interactional practice that I recorded in different contexts during the study. It facilitated an analysis of the pedagogic discourse artefact in terms of the constitution of boundaries and social relations. For example, Bernstein's work, as I applied it, facilitated my efforts to demonstrate the complex manifestation of the institutional effects as they emerged in the recorded interactions of the participants. Supporting Bernstein's (2000) argument I identified distinctive discursive artefacts by describing different institutional modalities in terms of relations between power and control. The discursive artefact I recorded during the individual interviews and at the beginning of the DWR-based Intervention with the Business School lecturers was distinctly different from that which I later recorded in the MUGs context and in the FDT School context. Interestingly, using the Bernsteinian model I found that the discursive artefact which I recorded in the focus group at the FDT School has a similar classification and framing to that which I found in the MUGs context. This demonstrates that the transformation in lecturers' thinking and the collaborative efforts brought about by the DWR-based Intervention existed organically at another school of ITWI. This supports Daniels' (1988) observation that different types of organisational form could characterise whole schools or that different types of structures (instrumental and expressive)

could be found in the same school, as my findings revealed in ITWI. Complementing my activity theory analysis with Bernstein's (1996) framework allowed for a deeper understanding of the relationship between thinking and talking in the contexts of interest while analysing and describing the institutional arrangements in those contexts. The findings revealed that the discourse recorded towards the end of the study from the Business School lecturers who had participated in the DWR-based Intervention bore strong similarities to the discourse recorded from the focus group lecturers in the FDT School. The transformation that was recorded in the discourse of the DWR-based Intervention participants at the beginning and the end of the study suggests that the culture of a context can be influenced in a way that facilitates lecturers in engaging with a technology such as Moodle.

Bernstein (1996) criticised theories of cultural reproduction for being problematic in their absence of rules which allow researchers to define what had been elaborated and what had changed in the analysis of pedagogic practice. His coding framework of classification and framing sought to overcome this problem. My findings show that the use of Bernstein's coding framework did provide a method of illuminating the changes in the pedagogic practice of the participants who established the MUGs context during the DWR-based Intervention. The findings reveal that the MUGs context presented a different classification, in Bernsteinian (2000) terms, to that found in the wider Business School context at the beginning of the study. This reveals a change had taken place as a result of my activity-theory-grounded intervention. The findings reveal a weak classification (C--) for the MUGs, which signifies the weak boundaries between the lecturers in the group. These weak boundaries facilitated a strong collaborative and collegial effort. In Bernsteinian (1996) terms power can be seen in the classification of a group in terms of the boundaries it creates and legitimizes. At the beginning of this study the findings revealed that the individuals in the Business School were strongly insulated from one another, which served to produce a highly individualistic work setting.

The formation of the weakly classified MUGs context as a result of the DWR-based Intervention established an alternative power base within the wider context of the Business School. It is important to note that while the MUGs group was weakly classified because of the collaboration and connectedness of the individuals in the group, it was strongly insulated from the wider context of the Business School where it was situated. The boundaries between the MUGs and the wider Business School context were distinguishable and realisable by the lecturers in the wider school context as the MUGs became known for their expertise in Moodle and their newly developed interest in teaching technologies. Crucially, the focus of power is on the relationships between categories (Bernstein, 2000). My findings show that the newly formed MUGs category had a power vested within it which was generated by the participants' emerging bonds with each other. This facilitated them in working together to develop their Moodle competencies. A shift in the division of labour, whereby the participants took responsibility for their own Moodle training in terms of both securing an external expert and organising the training format, gave the MUGs participants their power.

Control, in Bernsteinian (1996) terms, establishes legitimate forms of communication which are appropriate for different categories. My findings track a change in the discourse artefact as the MUGs category became established. For example, the participants moved from speaking in the first person singular ("I") to the first person plural ("we"). As suggested in Bernstein's work this demonstrates a change in the regulative discourse (indicating the social order and how participants identified themselves) as a direct result of a shift in the division of labour. The participants showed a strong identity with the MUGs category. They distinguished themselves from the wider Business School context in identifying themselves as a subcategory whose individual members had voluntarily given their time to work together to engage with Moodle and to enhance their pedagogic practice. The findings further reveal that the participants wanted to sustain MUGs as a working group after this study ended. This suggests that the MUGs context provided a setting more conducive to the lecturers' professional development than that which they experienced in the

wider context of the Business School, thus further suggesting that cultural context does impact on engagement with Moodle. The structural form that emerged in the MUGs context was different to that which existed in the wider context of the Business School. This finding supports Blin and Munro's (2008) argument that changes in the social structures of higher education settings are likely to be needed if we wish to challenge lecturers' low uptake of teaching technologies.

7.4.2 Factors raised as barriers

The lecturers' perceived lack of technological skills in Moodle emerged as a barrier to the enhancement of lecturers' pedagogic practice in this study. Other studies (JISC, 2008) have found that staff appreciate advantages afforded by technology, but they are often disinclined to engage with it because of their uncertainty about how to leverage these advantages owing to time constraints. I found that lecturers believed Moodle could enhance their teaching practice, although they did not understand what form such an enhancement would take. The issue of time to devote to gaining Moodle competence arose, but not as a key determining factor for low engagement. Instead, I found that lecturers voluntarily gave their time to engage with learning Moodle when a suitable structure for learning was established and they believed that the training was appropriate for their needs. The findings reveal that generic in-house Moodle training did not enable the lecturers, as Saks (1997) also found, to subsequently transfer any knowledge acquired during the training into their own teaching practice. I discovered that the lecturers deemed the training inappropriate for their needs. This finding supports Bates (2000) and Salmon (2004), who argue that existing ICT training schemes for academic staff in universities often do not produce the desired results.

While I did find, similar to other studies (Schneckenberg, 2009), that factors such as time constraints and inappropriate training arose as barriers to engagement with Moodle, the individualistic nature of the institutional context was foregrounded as the most pressing issue. My findings support Schneckenberg (2009), who challenges the popular arguments that the visible barriers,

including technical issues, time constraints and lecturers' lack of interest in technology, represent the actual reasons for the low engagement with technology in universities. He advances the theoretical argument that structural peculiarities and cultural values in academic communities are strong determining factors for academics' low engagement with teaching technologies. Based on my findings I argue that the more commonly cited barriers to engagement with teaching technologies are valid, but they may not be as inhibiting as much of the literature suggests. I found that the structure of the context was the primary determining factor for lecturers' low engagement with Moodle. This adds to the recent discussion (Oliver, 2011; Sewlyn, 2012) that researchers should look more towards social, cultural and historical factors as determinants of successful integration of ICTs in higher education. My findings also suggest that this approach can be effective and fruitful.

7.4.3 Subject position – transformation in individual lecturers

An interesting issue arises in this study in relation to subject position. Figure 7.1 below shows the lecturer position (Lx) in relation to the contexts of interest to this study.

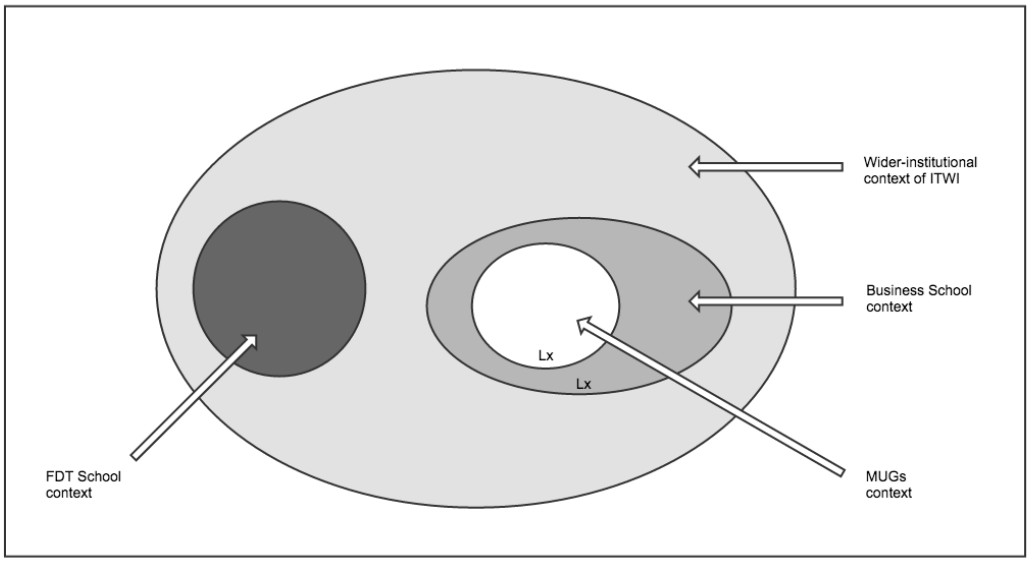

Figure 7.1: Subject position (Lx in the figure) in context

The analysis shows that the lecturers formed the MUGs as a result of shifting the division of labour in their efforts to develop competency in the use of the tool

Moodle. Daniels (2008b) notes how Bernstein's theoretical move in relating social positioning to the distribution of power and principles of control opened up the possibility of grounding an analysis of social positioning and mental dispositions in relation to the distribution of labour in an activity. There is an implication that the subject (from an activity theory perspective) should be represented by the "voice" in which a particular "message" is adopted (Daniels, 2008b). My findings show examples where the subject (lecturer) did take up a particular "message" in the activity system of the MUGs context. For example, participant lecturers changed their teaching practice through their engagement with Moodle as a result of being part of the MUGs context. This change in a lecturer's position represents a transformation in how the lecturer thinks about his/her practice and the integration of Moodle as a result of participating in the DWR-based Intervention. This finding supports Feixas and Zellweger (2010), who suggest that in order for lecturers to change their teaching practice they much change themselves and their relevant beliefs. Furthermore, it sheds light on a currently under-explored issue in learning theories (Yamazumi, 2008), namely how people change themselves as they change their circumstances.

Subject agency makes it important to consider the relational interdependence of individual and social agencies (Vygotsky 1978). The fact that the participants in MUGs are also members of the wider context of the Business School is worthy of discussion from the perspective of subject position. If we take lecturer x (Lx) in figure 7.1 above, it is valid to ask what happens to Lx as s/he moves between the context of MUGs (when s/he is in a DWR-based Intervention session) and that of the Business School (where s/he operates daily). The findings show that the MUGs participants became recognised in the Business School for their competency in the use of Moodle. They also showed a strong desire to keep their group together and did not wish to allow others to join once they were established as a group. In Bernsteinian terms, the regulative discourse, which represents the moral order and value system, provided insights into the social order of the lecturers' context. I found that the MUGs context produced a strongly classified regulative order, representing the strong sense of moral order and identity within the group. It contrasted with the weak moral order and lack

of identity which I found at the beginning of the Intervention when the participants spoke about the wider Business School context.

For an individual who moved between the two contexts, as was the case for all of the MUGs participants, there are a few points worthy of note. When a MUGs participant reverts back to the Business School, let us say after one of the DWR-based Intervention sessions, it is likely that the context of the Business School still exhibits the effects recorded in the lecturers' discourse at the beginning of the study, most notably the individualistic environment. The findings reveal that the discursive manifestations from that same individual vary depending on where they are located (in MUGs or in the Business School). When an individual is within a DWR-based Intervention (MUGs) session they do not feel the effects of the wider context because they are focused on working collaboratively, sharing knowledge and developing their Moodle competency; however, that is not to say that those wider effects do not still exist. The MUGs context gives the individual the collaborative work setting that is absent from the wider Business School context. This is exemplified when the MUGs participants express their desire not to allow others to join their group. What is interesting is how the participant lecturers replicate the same individualistic thinking that they found debilitating in the wider context of the Business School. The difference is that this time the thinking is produced by a defined group (the MUGs) within the Business School rather than as individual against individual. Valsiner's (1997) zone theory (see chapter two, section 2.18) is useful in understanding this as environmental shaping of individuals. The ZFM, which represents a cognitive structure of the relationship between the person and the environment, is understood in terms of constraints that limit the freedom of their thoughts and actions. My findings suggest that although the lecturers formed the new collaborative group MUGs they were still to some extent constrained by the thinking that had shaped them in the Business School, as evidenced by their desire to strongly insulate and confine the MUGs to a defined group of individuals.

Daniels' (2008b) idea of how the ZFM promotes canalisation through the constraints of semiotic regulation is helpful if one thinks of the lecturers' activity system as never fixed, but constantly in a state of flux. This suggests that shaping is taking place, but it cannot be reduced to one single effect. The reasons for a particular effect are more likely probabilistic than specifically determined. The findings suggest that the MUGs participants continued to collaborate on Moodle-related issues with one another outside of the Intervention, including through informal coffee discussions. Their desire to maintain the MUGs group after the research ended is suggestive of its potential to fill their need for a more socially interactive work context. I found, as Hasan (2005) suggests, an inescapable relation between one's social positioning, one's mental dispositions and one's relation to the distribution of labour in society. This is revealed in the way that the MUGs participants were seen as having expertise in Moodle and related teaching technologies as a result of partaking in the DWR-based Intervention and also in their own realisation of their position within the collaborative group MUGs.

7.4.4 Wider institutional effects

My findings support Engeström (2008), who found that teacher teams created to form an alternative to the dominant practice questioned tacitly accepted rules and boundaries. While the participants in my study similarly questioned rules and boundaries and created an alternative to the dominant practice, the significant wider institutional effects set my study apart from Engeström's. Employing Engeström's (1987) theory of expansive learning (see chapter six) as a framework of explanation for these wider institutional effects, I see Engeström's (2008) notion of a germ cell as helpful in explaining how an initial abstraction, such as the formation of MUGs, became enriched and transformed into a concrete system of multiple, constantly developing manifestations. This represents the idea of ascending from the abstract to the concrete, where an initial idea is transformed into a complex object and into a new form of practice (Engeström, 2008); for example, the provision of Moodle training for lecturers in other schools, the repeated Institute-wide delivery of the T*echnology-Enhanced*

Learning module, the generation of interest among lecturers in other technologies beyond Moodle and a related national academic conference.

The findings reveal that the DWR-based Intervention had wide-reaching effects on the wider or meso organisational context. These effects were entirely unpredictable and unknowable at the beginning of the study. Enquiries from lecturers outside the Business School alerted me to the possibility that the object of the MUGs activity system (to engage with Moodle to enhance their teaching practice) was shared at a broader level in ITWI. This supports Engeström (2007, p. 37), who comments that practitioners facing major transformations in their work activities are "working out contradictions and struggling to overcome the impossible". For example, although Moodle had been available to all staff at ITWI since 2007, by mid-2010 only approximately one third of staff were engaging with the tool and even then only at a basic level (field notes, May 2010). Schneckenberg (2009) similarly observed that a critical mass of academic teachers still lack the competence that would enable them to know why, when and how to use ICT in education. Likewise, Morón-Garcia (2007) noted this lack of competence in reference to academics' pedagogic uncertainty regarding the use of ICTs. The findings suggest that the lecturers were working out contradictions and struggling with the impossible (Engeström, 2007b), by which I mean the lecturers were struggling to engage with Moodle as individuals without a formal learning framework. The findings show that the need for a collective approach to a resolution existed. I presented the analysis of this phenomenon in chapter six as expansive learning.

7.4.5 Attempting to recontextualise the Intervention

The analysis in chapter five (see section 5.2), showed how management attempted to extend the impact of the DWR-based Intervention into the wider Business School context by requesting the Intervention participants to demonstrate their learning in the wider School context. Interpreting this action through Bernstein's (2000) framework, this was an attempt to extend the impact from the strong regulative order of the DWR-based Intervention to the much weaker regulative order of the Business School. It supports the notion that

management wanted to recontextualise the Intervention and bring it back to the dominant order in the wider context of the Business School. I consider this managerial action as an attempt to impose collaboration from above, i.e., *contrived collegiality* (Hargreaves, 2003), which could potentially inhibit bottom-up professional initiative. The participants felt that they had brought about the collaborative effort themselves and did not react favourably to management's request to bring it into the wider Business School context. They had a strong sense of ownership of the MUGs context. For them, the wider context of the Business School was a place where the absence of a collaborative work spirit hindered their development of Moodle competencies, a hindrance which they had overcome in the MUGs context.

Bernstein (1996) asserts that recontextualisation refers to the rules or procedures which enable the movement of educational knowledge from one site to another. Singh (2002) argued that this movement of knowledge created a space for changes in power and control relations. If we employ this concept of recontextualisation in this study, the creation of MUGs did open a space for changes in power and control. The participant lecturers, through their development of Moodle skills in the MUGs context, created a space where they took control for their own learning. They established a power and control relation which did not previously exist in the Business School. This was evidenced by the way the lectures learned to use Moodle in their own practice and to sustain the MUGs group after the DWR-based Intervention sessions ended. In Bernstein's (2000) terms the framing relationship between the MUGs participants and management was weakening because these lecturers were taking more control. They were gaining agency in taking control of their own situation. This is an example of the Vygotskian (1997) notion of subject agency, whereby subjects change the world as they change themselves. This finding also supports Engeström and Sannino (2010), who asserts that in formative interventions the eventual shape of the intervention is determined by the participants. The core mechanism of double stimulation, as applied in the DWR-based Intervention, implies that subjects gain agency and take charge of the process. My findings support this concept as the lecturers' collaborative work

through the DWR-based Intervention enabled them to become more self-determining. The MUGs created a safe place where they could do something interesting (collaborate and develop Moodle competencies as they wished). They weakened the boundaries between themselves inside the MUGs context and strengthened the boundaries between themselves as a group and those on the outside. This happened in a context where, as my findings reveal, this form of collaborative thinking did not seem to be fostered.

The present study supports Hargreaves' (2003) argument that attempts to *re-culture* schools into more collaborative workplaces can also create problems when they are hijacked by hierarchical systems of control. Arguably, it was not unreasonable for a manager to ask lecturers to show their new knowledge to the rest of the department, it could be seen as dissemination of knowledge. The interesting point about the finding was the strong negative response from the participants, which suggests how they interpreted the request. While Kopcha (2010) and Roberts (2008) suggest that lecturers who are technologically advanced can act as mentors and advocates of technology by sharing materials and experiences with their peers, in my study the participants were unwilling to assume a mantle of responsibility for what they perceived to be other lecturers' learning. However, Roberts (2008) and Kopcha's (2010) findings were evident within the context of the MUGs itself, where lecturers willingly shared knowledge and learned from each other. The MUGs participants saw management's request as "hijacking" (Hargreaves, 2003) their efforts, hence their resistance. This reveals the pertinent position of cultural context in relation to engagement with the technology Moodle.

7.5 Chapter summary

This chapter presented a discussion of the main and secondary findings of this study resulting from the analysis presented in the previous three chapters. The findings were presented as three main thematic outcomes and additional, secondary outcomes. Using activity theory complemented by aspects of the work of Basil Bernstein to review the findings revealed that notions of collaboration, affect and influence were central concerns in this study. Peripheral to this,

concerns relating to barriers to technological uptake among lecturers, subject position, wider institutional impact and recontextualisation were also discussed. All of these aspects demonstrated the importance of cultural context on lecturers' engagement with the technology Moodle.

8 Chapter eight: Conclusion and implications

8.1 Introduction

This thesis examines the relationship between cultural context and the engagement of higher education lecturers with technology. It does so through the lens of Cultural Historical Activity Theory (Engeström, 1987), which is extended by the work of Basil Bernstein. In the form of conclusion, this chapter presents how the thesis answers the research questions. It discusses the theoretical, methodological and practical implications of the study, followed by the limitations of the study and suggestions for further research.

8.2 Answering the research questions

This study was primarily conducted in the Business School at an institute of technology in the Republic of Ireland. The study began with the question: What is the relationship between cultural context and lecturers' engagement with the VLE Moodle? I conducted a review of the relevant literature and an exploratory study at the Institute to test the efficacy of the opening research question. As a result I concluded that an intervention in lecturers' pedagogic practice was an appropriate way to conduct the study, and, therefore, I formulated the following research question:

> What happens when a DWR-based intervention is conducted in lecturers' pedagogic practice in order to understand if cultural context impacts on their engagement with Moodle?

My choice of a DWR-based intervention facilitated the collection of a complex dataset including individual interviews with the participants, a focus group interview, video-recorded intervention sessions, researcher observations and unsolicited dialogue and feedback from the participants. The study was qualitative in nature. I conducted a DWR-based intervention with 12 participant lecturers in the Business School over a 12-month period. The analysis of the data collected during the Intervention, as set out in chapters four, five and six, reveals

that the Intervention had significant impacts for both the participants and the wider Institute at the time that the study was conducted. The outcomes of this DWR-based Intervention show that transformations take place if the action directed at the object of the activity system under study is effective. The DWR-based Intervention was a single-point intervention. It caused a positive disturbance in the lecturers' pedagogic practice, and it also had positive ripple effects throughout the organisation. The DWR-based Intervention created a new cultural context—albeit only for the duration of the study—and this enabled me to conclude that culture can be influenced in a way that helps lecturers to successfully adopt a new technology. Conducting the DWR-based Intervention successfully demonstrated that participating in the discourses produced in a context has psychological consequences for individuals who inhabit those contexts, and, as such, it potentially impacts on their engagement with Moodle.

Chapters four, five and six presented a three-part analysis of the data. In chapter four I focused on the participants from the Business School in the DWR-based Intervention, conducting an activity theory analysis of the data collected during the Intervention sessions. In chapter five I added another layer to the analysis by employing Bernstein's pedagogic theory to examine how the discourse recorded reflected the social structure of the context in which it was generated. I also presented an analysis of a focus group that I conducted with lecturers from the FDT School in ITWI. I chose the FDT School as the received wisdom held that it functioned in a more collaborative way than other schools in ITWI. This analysis served to strengthen the findings that emerged from the context of primary interest—the Business School—in that the collaborative culture created through the DWR-based Intervention existed organically at the FDT School. Employing Bernstein's theory allowed me to distinguish analytically between the contexts in which different forms of discourse were produced. In chapter six I extended my activity theory analysis to the effects of the Intervention in the wider context of the Institute. I chose to present an analysis based on the self-reporting discourse of the participants in the study. This decision was influenced by my use of Engeström's third generation of activity theory, which is focused on grasping development potential and dynamics in a human activity system. In adopting

Engeström's (1987) model I chose to initiate, support and record qualitative changes in the practical work activity of the lecturers who participated in the DWR-based Intervention. Choosing Engeström's (1987) version of activity theory also meant that my focus was not only on producing an academic report but also on exploring the potential for change that lay in the lecturers' practice this is evidenced by my use of an interventionist strategy. For this reason my analysis concentrates on the discourse of the participants, as CHAT provides a dialectical framework for analysis which orients us towards problematising the role of the research subjects (the participants). CHAT views human activity as a socially constructed, collaborative activity where developmental potential resides. I have presented historical data and cultural context data in describing all institutions addressed by the research and history of the practice of the participants (see sections 3.9.1 and 7.2). However, the self-reporting discourse of the participants provides the focus of the data: indeed, scholars (Avis, 2009; Peim, 2009) have criticised Engeström's version of activity theory for encouraging this type of decision. They argue that an Engeströmian perspective encourages conceptual slippage and neglect of wider patterns of social relations in the wider cultural-historical context. In this study, I set out to investigate the phenomenon of lecturers' low engagement with TEL from the lecturers' perspective. I believe the focus of my attention on the lecturers' discourse is appropriate in this study: after all, language is the one semiotic system that has the potential to represent the everyday lived reality of members of a community (Hasan, 1996). Knowledge arises from an analysis of the participant's discourse which has cultural and historical intelligence embedded within it. The three analyses in chapters four, five and six provided answers to three questions which are predicated on the primary research question stated above.

Q1. What tensions and contradictions do the participant lecturers experience, and how does a DWR-based intervention facilitate a resolution?

The analysis revealed that a transformation in lecturers' thinking on their engagement with Moodle took place throughout the Intervention. The lecturers

engaged in a collaborative process wherein they discussed the tensions and contradictions in their setting. These included: the individualistic and bureaucratic nature of their work context, their desire to enhance their teaching practice with relevant technologies and their need to move from a position of helpless frustration to one of taking control. The DWR-based Intervention revealed that the introduction of Moodle demanded that the lecturers work together. It created a space of possibility where the lecturers could critically engage with Moodle. By breaking down (to a large extent) the individualism the lecturers were able to work on the object of their activity in a way that they had not done before, although primarily, if not exclusively, within the context created by the Intervention. The Intervention facilitated them in creating a small collaborative group which served to promote their professional development and engagement with Moodle. This collaborative process stood contrasted with the largely individualistic setting that the lecturers perceived to exist in the Business School outside the context of the Intervention. The transformation in how the lecturers engaged with Moodle as a result of participation in the DWR-based Intervention not only demonstrates what happens as a result of participation in such a process but also contributes to our understanding of how cultural characteristics can influence lecturers' engagement with teaching technologies. While acknowledging the transformation in the lecturers' thinking as their expressed desire to sustain the collaborative working group once the Intervention ended it is not likely that the same effort would be maintained without the support of the Intervention context.

Q2. What changes does a DWR-based intervention have on the participant lecturers' discourse, the social structure of their work context and their pedagogic practice?

Participation in the DWR-based Intervention revealed a change in lecturers' discourse during the period of the study. As demonstrated in chapter five using Bernstein's theory, I noted a shift in the regulative discourse. In the context of the Intervention, the lecturers realised the need to shift the division of labour and, as a consequence, the regulative discourse. By taking control of how they

developed competency in the use of Moodle, they developed a strong sense of their own moral order and identity as a working group. The social structure within the DWR-based Intervention was unified and collaborative—it was a place where lecturers worked together, shared knowledge and critically assessed their appropriation of Moodle. Drawing on Bernstein's classification and framing model enabled me to describe how the Intervention context was formulated differently to that of the Business School, where the lecturers operated daily. For example, the DWR-based Intervention presented a different classification to that which I found in the Business School at the beginning of the study. Furthermore, by conducting a focus group at the FDT School I was able to show how a similar social structure to that created by the Intervention existed organically at another school in the same Institute. As I discussed in chapter seven, participation in the Intervention facilitated individual participants in making changes to their pedagogic practice as they developed competencies in Moodle. The participants could realise new positions by enhancing their teaching with Moodle. These positions were made manifest through the work of the DWR-based Intervention. In this study I assessed these social structures and the transformation that I noted through an analysis of lecturers' discourse. While I acknowledge that this is only one means of assessing the impact of the Intervention and indeed others might achieve a more rounded interpretation, my intention was to understand the everyday lived experiences of the lecturers from their own perspective as such I consider a focus on their discourse to be the most appropriate method.

Q3. What are the wider-institutional impacts of a DWR-based intervention conducted in one school within a higher educational institution?

The DWR-based Intervention had unexpected but significant wider-institutional impacts. It was a single-point intervention, but the effects of the Intervention spawned a number of initiatives across the Institute. While examining the relationship between cultural context and lecturers' low engagement with Moodle, I found, among other things, unexpected cross-school collaborations. This demonstrates that the activity system in which I intervened does not exist in isolation; instead, it is part of a network of connected activity systems. By

tracking the movement of the focus object—learning Moodle—and how it was appropriated by stakeholders at the Institute, I gained insights into how information travels and how people become connected and collaborate across the Institute. In effect, the outcomes of the DWR-based Intervention became tools in other activity systems. The higher management at ITWI noted the Intervention as a model to be considered for implementation in other schools in the Institute. Moodle training classes were set up for lecturers in other schools. A one-semester *Technology-Enhanced Learning* Module was delivered four times and was available to all lecturers across the Institute. These wider impacts were significant in helping lecturers to engage with Moodle and other relevant teaching technologies, and they attest to the success of the single-point DWR-based Intervention as they reveal its creative potential. By creating an internal stir at grass-roots level through the DWR-based Intervention, a complex and interesting institutional transformation occurred in an unusual way. Crucially, the wider impacts of the Intervention also highlight the need for leadership if that creative potential of an activity is to be harnessed to good effect.

8.3 Implications of the research

8.3.1 Theoretical implications

This study aimed to understand the relationship between cultural context and engagement with the VLE Moodle. Using activity theory revealed that the lecturers needed to collaborate in order to progress and integrate the tool Moodle into their pedagogic practice. Activity theory provided an appropriate approach to the study of the lecturers' artefact-mediated, object-oriented activity. However, it did not account fully for the transformation that took place in that it did not enable me to describe and position the discursive and interactional practice of the settings, nor did it allow me to conduct an in-depth analysis of the role of emotions in the social interactions which emerged strongly in the study. To allow for the incorporation of these issues into my study, I looked to aspects of Bernstein's (1996) concepts of classification and framing to complement my activity theory analysis.

Bernstein's (1996) theory enabled me to move from the issues that activity theory handles, such as rules, community and division of labour, to a deeper analysis of the discursive artefacts that were produced within the lecturers' activity. Bernstein's theory of the social structuring of discourse in society provided a language which allowed me to supply richer descriptions of micro interactions in relation to the macro structures. This also provided a sound basis for analysing power relations and principles of control in the contexts of interest to the study. The use of Bernstein's model to complement activity theory has theoretical implications, particularly in relation to the subject position. Daniels (2008b) suggests that the notion of "subject" in activity theory requires expansion and clarification. Arguably, my study provides a critique of the lack of sophistication of the notion of subject in activity theory as I looked at changes in subject position within a particular activity as a result of a DWR-based Intervention. I have shown that it was only through the use of Bernstein's model as a complement to activity theory that it was possible to give a rich description of subject position. This is because Bernstein (2000), through the notion of "voice" and "message", brings the division of labour and rules into relation with subject position in practice. This suggests that activity theory could be further developed to incorporate a language of description that would allow for the consideration of issues of power and control at structural and interactional levels of analysis. Descriptions of the nature facilitated by Bernstein's work are important in carrying out empirical investigations and analyses of the psychological consequences for individuals participating in different forms of social organisation.

Bernstein's classification and framing are predictive of the discourse produced in a particular setting. While Bernstein's coding model is probabilistic rather than absolute, it did allow me to analyse the discourse and thus model the setting in a way that complemented and enriched the activity theory analysis. Applying Bernstein's (2000) coding model to the discourse artefact recorded in the study allowed me to show how a collaborative social setting supported lecturers in developing skills in Moodle-use, whereas an individualistic setting inhibited and frustrated them.

The study also highlights some of the difficulties in working with Bernstein's concepts of classification and framing in a higher education context. It suggests the possibility of interrogating the classification and framing model further in relation to particular pedagogic forms encountered in the workplace setting, as opposed to the classroom setting. It is accepted that Bernstein's formulation of pedagogic discourse allows for the analysis of discourses produced in activities structured through specifiable relations of power and control within institutions. Bernstein (1996, p. 17) defined his interpretation of pedagogic practice as "a fundamental social context through which cultural reproduction-production takes place". Daniels (2006) further suggested that Bernstein's work can be extended to the analysis of social relations in industry or commerce. Although Bernstein (1996) claimed that pedagogic discourse was not just limited to education but can be found in other fields, such as doctor and patient, manager and employee, etc., studies tend to concentrate on classroom settings. The context in my study was formulated differently. I attempted to use Bernstein's theory within an educational setting, but from the perspective of it as lecturers' workplace. The participants in the DWR-based Intervention were concerned with developing Moodle competencies, which, arguably, could have been analysed as a classroom setting. However, my focus was on how the discourse produced made visible the macro-constraints which shaped it and thus shaped the thinking of the individuals involved. Bernsteinian analyses have been carried out widely in the field of school education and more recently in higher education. These analyses have tended to focus on the structure of pedagogic discourses and their impact on students. This study highlights the applicability of Bernstein's theory in settings beyond the classroom and the field of education as my focus was on lecturers and how they were impacted by the pedagogic discourse in their work environment. It suggests the need to expand empirical studies, in order to challenge the broader interpretations of Bernstein's theory. This would contribute to further interrogation of Bernstein's analytical tools of classification and framing.

A final theoretical implication is based on Engeström and Sannino's (2010) suggestion of the need for theoretical and empirical efforts to ensure the integration of the two currently understood directions of the theory of expansive learning: the "up and outward" direction of interconnected activity systems with shared and contested objects (cognitive), and the "down and inward" direction of subjectivity, experiencing, emotion and moral commitment (affective). I argue that this study contributes to the integration of these directions. The DWR-based Intervention, on the one hand, analysed the shared object of lecturers' desire to engage with Moodle (a cognitive exercise), while, on the other hand, it analysed the subjective need for individuals to engage in collaborative activity to fulfil that shared object (an affective exercise). The need for a consideration of the affective dimension of human functioning arose as a central concern and thus an implication in this study, thereby supporting the recent calls (Engeström and Sannino, 2010; Daniels, 2012; Roth, 2009) for further activity-theory-based empirical research on this aspect. The study gives some insight into the shaping effect of contexts in addition to the ways in which they are transformed through the agency of participants.

8.3.2 Methodological implications

This study also contributes methodologically to DWR research, which is concerned with solving actual problems in local, real-life work communities through interventions (Engeström, 2007c). The main methodological implication of this study was the introduction of an external expert, at the request of the participants, to help with the practical aspect of the Intervention, i.e., engaging with Moodle. After the first Intervention session I became a participant observer, instead of the sole facilitator, and worked in conjunction with the external expert to facilitate the DWR-based sessions. This is unusual in DWR interventions which by design are conducted by a group of researchers. Furthermore, as a full-time lecturer in the Business School I was also a participant in the context under study. This is not conventional in typical Engeströmian DWR interventions. This small-scale, local initiative that adopts the core principles of DWR methodology contrasts with the prescribed Engeströmian approach in which an intervention is typically conducted as a large, funded research project run by a team of

researchers who act in a consultancy role for an organisation, usually at the request of senior management (Engeström et al., 1996; Engeström, 2007c; Daniels et al., 2007a; Senteni, 2005; Kerosuo et al., 2010). In contrast, this study was motivated by my doctoral research and by my desire to foster change from the grass-roots level.

A further methodological contribution of this study is that it suggests a new feature in DWR-based interventions. DWR is fundamentally an interventionist approach, whereby the focus is on transformations in collective activity systems (Engeström, 1996). While the findings in this study agree with others (Engeström et al., 1996; Engeström et al., 2005a; Kerosuo et al., 2010) in how an activity system can be transformed through an interventionist approach, an interesting additional feature I found in this study was the movement (in activity theory terms) of the object through the organisation, i.e., how the intervention had unexpected institutional effects. When I acted upon these effects, it became possible to analyse the flow of information through the organisation and capture the movement as expansion of the object through time. Unexpected effects are not unusual in DWR work, but the fact that I was the researcher and also a member of staff in ITWI arguably gave me an emic perspective and understanding that would have been unlikely with an external consultant. Thus, my study highlights the advantage of the researcher being a participant and "insider", especially for small-scale, DWR-based intervention studies. It shows a method of accessing the tacit information that exists in an organisation. The contribution shows how the DWR methodological principles can be adopted, but also adapted, to suit the needs and the moving object of the participants' activity system.

8.3.3 Implications for lecturers' low uptake of teaching technologies

Scholars continue to debate how best to address the slow uptake of technology by lecturers in their teaching practice. Recently, authors (Conole, 2010; Schneckenberg, 2009; Selwyn, 2011) emphasised the need to look beyond the technology and broaden investigations to consider a socio-cultural approach. The implication of my study shows that socio-cultural context has a significant

impact on lecturers' practice. While the most frequently cited barriers to engagement with technology, such as inappropriate training and lack of time, money and technical knowledge on the part of academic staff, are contributing factors, the real issues are still not fully understood. This study's findings have implications for other educational institutions seeking to understand how to improve engagement with technology because it highlights the necessity of considering the social structures that pertain to different institutions.

Teaching is often considered an individualistic profession, but if institutional structures (by their nature) foster individualism this may well inhibit the members in appropriating a new technological tool. Vygotsky (2004) insisted that creativity is a social process which requires appropriate tools, artefacts and cultures in which to thrive. If institutions want to foster the creative and critical use of technology on the part of academics then an implication of this study is that they must consider how to establish the appropriate structural and cultural conditions in their everyday settings. Institutions need to understand the complexities of their own contexts when attempting to integrate pedagogic practice with technology.

A further implication of this study is the need for higher education institutes to develop practices of collaboration as a response to non-supportive individualistic contexts. Professional individualism has long been seen as an obstacle to collaboration (Nias, 1993), and Hargreaves (2003, p. 169) notes that corrosive individualism "wears down teachers from the outside and eats away at their sense of community from within". This study has implications for understanding lecturers' uptake of technology in that it shows how the fostering of collaborative effort empowered lecturers to integrate the technology Moodle into their pedagogic practice. The fostering of a collaborative spirit is key to enhancing progress in lecturers' engagement with technology. Institutions that aspire to develop technology-enhanced teaching and learning must consider the merits of addressing that aspiration collectively and collaboratively.

8.4 Implications for policy and practice

One implication of this study for policy and practice is that higher education leaders need to take a pragmatic and context-oriented view of lecturers' engagement with teaching and learning technologies. Efforts at technological integration need to be tailored to serve the real learning needs and motivations of lecturers within their various contexts. Gaining an understanding of a context and the factors that influence the priorities and drive the behaviour of lecturers is the first step towards successful integration. It is advisable to find ways of encouraging collaboration among lecturers in order to foster a culture where academics can learn from one another's pedagogic experiences. A move from generic ICT training courses to more informal competence development initiatives is likely to be fruitful. One approach to this is for institutions to concentrate on the lecturers' contexts and how they can support and facilitate them in engaging in a collaborative, critical and reflective process regarding the integration of technology with pedagogic practice. Direct interventions taking place at the level of lecturers' practice in order to foster the agency and will of groups and the individual within them are also likely to provide an effective way of integrating technology into pedagogic practice. An implication of this study is that those who spearhead the introduction of new technologies into higher education institutes will find it very difficult to respond to this challenge if they do not examine the internal cultural contexts in which their lecturers, the gatekeepers of this technology, live and work every day. For example, one of the most valuable impacts of the DWR-based Intervention in this study was the formation of a collaborative group within the Business School. The group bonded strongly and also developed a collaborative practice outside of the Intervention sessions. While this was a positive outcome for the participants, a practical implication emerged in that the group saw me as their leader even outside of the Intervention context; this was a role I could not fulfil for practical reasons (focusing on full-time work and the doctoral study). This implication highlights the need for considerable effort in terms of time and coordination to sustain the group and further contribute to developing a collaborative culture in the School.

The National Strategy for Higher Education in Ireland (Hunt, 2011) describes how the sector must respond to new technologies and their potential for enhancing the learning experience. Furthermore, the Irish Higher Education Authority, in their recent report to the Minister for Education and Skills, outlined recommendations for reform of the Irish Higher Education landscape (H.E.A. (Higher Education Authority), 2013), stating that the HEA will support inter-institution collaboration. An implication of this study is that policy makers might address and understand the need to foster the development of collaborative cultures within institutions. This would enhance internal practices which, in turn, have the potential to lay the foundation for more successful inter-institutional collaboration. It is through understanding their own internal contexts with their habitual traits, behaviours and vulnerabilities that both lecturers and management might find the birthplace of transformative change, as I found in this study.

8.5 Limitations of the study

It is widely accepted that no research study is perfect. Some limitations of this study have arisen in three areas: sampling, data interpretation and my own inexperience of DWR.

Sampling

The sample I have used is not representative. The work in this study is exploratory and aims to expand understandings of the impact of cultural context on engagement with Moodle in one higher educational setting. I focused on a group that was representative of one school within ITWI. Although a focus group was purposively selected from another school in ITWI to strengthen the argument of how the macro institutional structure is related to forms of micro-interaction, the sample size is still small. Arguably, a larger sample from a larger number of schools across ITWI may make the findings more applicable in a broader sense. But, given that I was a full-time lecturer in the Institute at the same time as I was conducting the study, it was not pragmatic to take a wider sample. It is important to note that the sample employed in the DWR-based Intervention represents approximately one-third of the lecturers in the Business

School, the main context of interest in the study. As such, the sample size enabled me to conduct an in-depth exploration of the micro-interactions of the participants in a way that facilitated an understanding of how they constructed meaning from their experiences. This aligns with the constructivist paradigm (Easterby-Smith et al., 2002) which coupled with a critical realist perspective, influences the methodological choices for the investigation. The study embodies a combination of both description and action, which serves to extend understanding and bring about transformation in the educational setting where it was conducted. Identifying structures and attempting to change them (Bryman, 2008), as in this study, reflects a critical realist perspective which also aligns with the choice of the CHAT framework, as it naturally orients one towards intervention work. The participants in the DWR-based Intervention comprised an opportunistic sample of 12 lecturers from the Business School. These participants were interested in developing Moodle competencies and thus agreed to participate in the study. The lecturers' willingness and interest in partaking in the Intervention could be seen as a limitation as the data collected may have been very different from unenthusiastic participants. The lecturers were universally willing to give their own time to partake in the study over a period of 12 months, which suggests their desire for change in their context. However, this also reflects the fact that this study is what Robson (2011, p.4) calls "real world" research, focusing on a problem of direct relevance to the participant's everyday working lives.

Data Interpretation

As an insider researcher I was constantly concerned with the credibility of my findings during the study. I made a great effort to retain my objectivity with all participants throughout the study. I employed a peer reviewer to check my interpretations of the data. I also presented at a conference and to a group of lecturers at an Irish university, and consulted regularly with my supervisors. Nonetheless, the interpretation was largely a solo effort. As such, I acknowledge the potential limitation of viewing much of the data through the eyes of one individual, in that the data may be inherently skewed or biased towards one perspective. While I acknowledge this as a limitation of this study, it is, however,

a limitation of all qualitative studies where one person alone undertakes the interpretive process.

Developing researcher skills

At the outset of this study, I did not have experience as a DWR researcher, which was initially a potential limitation. The design of DWR typically requires a number of researchers to manage the process. However, as I explained in chapter three, my study is DWR-*based*, as necessitated by fact that I operated as the sole researcher managing the intervention process. One of the challenges of employing a DWR-based intervention is being adept at successfully reframing everyday concepts as scientific concepts within the intervention sessions. This is necessary to keep the participants focused, while also facilitating the process. I found this a demanding experience, as I conducted the Intervention while simultaneously developing my competency in the theoretical underpinnings of the DWR methodology. However, I observed that the impact of this limitation diminished as the Intervention progressed. I noted the development of my ability to perform more efficiently in my dual role of facilitator and researcher as a result of my significant intellectual development during the PhD process.

8.6 **Suggestions for further research**

In this study I used Activity Theory complemented with aspects of Bernstein's code theory. I evaluated my findings systematically and based on the credible foundation of current research. However, there is benefit in also concentrating on the affective, as opposed to only the cognitive, aspect of lecturers' professional development in uptake of teaching technologies. Further studies which concentrate on examining this dimension from the lecturers' perspective would be of value. The commonly accepted separation of the cognitive and affective dimensions when examining lecturers' uptake of teaching technologies has not proved sufficient. An examination of the affective consequences of participating in particular contexts has the potential to add much to the understanding of lecturers' uptake of technology in their pedagogic practice. Further research could also bring a critical perspective to our understanding of lecturers' engagement with TEL by examining the values and beliefs held by

those who are responsible for the introduction of relevant technologies to specific academic contexts.

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APPENDICES

Appendix A Research Ethics Approval Form

University of Bath Department of Education

MPHIL / PHD PROGRAMME: ETHICAL IMPLICATIONS OF PROPOSED RESEARCH

To be completed by the student and supervisors, and approved by the Department of Education's Transfer Panel or the Director of Studies if data are collected before the Transfer

Introduction

1. Name(s) of researcher(
Miriam Mc Sweeney
2. Provisional title of your research
An Investigation into Cultural Context and the Impact Upon the Use of Technology in a Third Level College in the Republic of Ireland.

3. Justification of Research
The Irish Government have committed substantial funding to the improvement of teaching and learning in higher level education. Irish Universities and Institutes of Technology have all introduced learning management systems (LMS's) to enhance their educational environments. However, I believe that cultural context cannot be undervalued in its impact on the appropriation of such technologies. This study proposes to investigate the relationship between cultural context and pedagogic practice at the Galway Mayo Institute of Technology in the light of its adoption of a LMS, (Moodle).

Consent

4. Who are the main participants in your research (interviewees, respondents, raconteurs and so forth)?
The participants are lecturers and students at the Galway Mayo Institute of Technology (GMIT), Galway, Ireland.

5. How will you find and contact these participants?
I work as a lecturer at GMIT therefore I have professional access to lecturers and students within the college. The participants will be contacted in person and through email.

6. How will you obtain consent? From whom?
I will obtain written consent (voluntary informed consent) from all the participants in accordance with British Education Research Association (BERA) guidelines.

Deception

7. How will you present the purpose of your research? Do you foresee any problems including presenting yourself as the researcher?

I will present the purpose of my research to all participants in advance. I will explain why I am undertaking this research as part of a higher degree programme and its significance for GMIT.

8. In what ways might your research cause harm (physical or psychological distress or discomfort) to yourself or others? What will you do to minimise this?

1

University of Bath Department of Education

MPHIL / PHD PROGRAMME: ETHICAL IMPLICATIONS OF PROPOSED RESEARCH

To be completed by the student and supervisors, and approved by the Department of Education's Transfer Panel or the Director of Studies if data are collected before the Transfer

None, that I can foresee. I will explain clearly the reasons for my research in advance of participation. This should minimise any possibility of distress. Participants always have the freedom to withdraw from the research at any point.

Confidentiality

9. What measures are in place to safeguard the identity of participants and locations?
Participants data will be considered private and confidential in accordance with BERA guideline.

Accuracy

10. How will you record information faithfully and accurately?
Information will be recorded using voice and video recording equipment. Data will subsequently be analysed according to established research methods.

11. At what stages of your research, and in what ways will participants be involved?
Participants are involved in the main study of my research. They will partake in individual voice recorded interviews and video recorded workshops.

12. Have you considered how to share your findings with participants and how to thank them for their participation?
Yes, I intend to write a report on my findings and make it available to participants when the study is completed.

Additional Information

13. Have you approached any other body or organisation for permission to conduct this research?
I have informed the Head of Teaching and Learning at GMIT of my intention to conduct this research and I have received full support for the project.

14. Who are the supervisors of this research?
Professor Harry Daniels
Dr. Kyoko Murakami
15. Any other relevant information.

Student **Miriam McSweeney**	**Signature:** Miriam McSweeney **Date: 18th Nov 2009**
Supervising Member(s) of Staff **Professor Harry Daniels** **Dr. Kyoko Murakami**	**Signature:** Daniels

University of Bath Department of Education

MPHIL / PHD PROGRAMME: ETHICAL IMPLICATIONS OF PROPOSED RESEARCH

To be completed by the student and supervisors, and approved by the Department of Education's Transfer Panel or the Director of Studies if data are collected before the Transfer

	Date:
Director of Studies / Chair of Transfer Panel	**Signature:**  **Date:** 18/12/09

A copy of this form to be placed in [1] the student file, and [2] an Ethics Approval File held by the DREO (Department Research Ethics Officer). The Director of Studies (MPhil / PhD) will report annually to the Department's Research Students Committee (white paper business) on ethical issues of particular interest that have been raised at transfer.

Appendix B Research Project Management Permission Request

This letter was presented to the Institute management and to all relevant heads of schools and departments.

Dear Head of Department/School,

I wish to inform you that I am currently studying part-time for a doctoral degree at the University of Bath (UK). I plan to conduct the empirical part of my research here in the Institute by investigating if cultural context impacts on lecturers' engagement with Moodle. In order to conduct the research I will carry out individual interviews with lecturers from various schools across the Institute. As the research progresses I may need to conduct group interviews with lecturers from particular schools over a twelve-month period.

Lecturer participation in the study will be on a voluntary basis. Participant lecturers can withdraw from the study at any time. Interviews with individual lecturers will be audio recorded, while any group interviews will be video recorded for the purposes of data analysis. All data collected will be coded to ensure that the participant lecturers and the Institute remain anonymous.

I envisage that the research will be useful for the Institute in helping to identify the challenges that may arise when attempting to integrate teaching and learning technologies with pedagogic practice.

I am seeking your permission to conduct interviews with lecturers in your department/school.

Any interviews I conduct at your school will be at times that suit the lecturers and will not interfere with their teaching schedule.

If you have any questions about the research please do not hesitate to contact me.

Thank you for your support,

Miriam McSweeney
Lecturer Business School

Appendix C Sample Participant Lecturer Consent Form

Research Project
The purpose of this research is to investigate if cultural context impact on lecturer's engagement with the technology, Moodle at ITWI.

Researcher
Miriam McSweeney – Lecturer in the Business School
Part-time PhD student, University of Bath

Participant consent:
I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered.

I understand that:

My participation in the project is entirely voluntary.

I am free to withdraw from the study at any time, should I withdraw any raw data connected to me will be immediately destroyed.

I can refuse to answer any particular question.

Any data I supply to the research will be stored securely and accessed only by the researcher.

All data collected will be coded to ensure that both the participants and the Institute remain anonymous

I agree to take part in this research project

Signature of participant: _____Date:_____

Signature of researcher:

_____Date:_____

Appendix D Interview schedule for lecturers in the exploratory study

1. How was Moodle introduced to your work environment?

2. Was it your first time using a VLE?

3. What was your attitude to Moodle's arrival?

4. What were the positive/negative aspects of Moodle's arrival to your work environment?

5. Why did you embrace or not embrace Moodle initially? Pedagogic purpose or pressure?

6. What did you hope to achieve by engaging with Moodle?

7. Were others involved in your introduction to Moodle?

8. Did you encounter any constraints in engaging with Moodle?

9. Can you tell me about the impact of Moodle on your teaching environment?

10. Has Moodle impacted on your workload?

11. Has Moodle impacted on your relationship with your students?

12. Has Moodle impacted on your teaching activities?

13. What features of Moodle do you use?

14. Do you think that Moodle is suitable for your subject area?

15. How has your engagement with Moodle developed since your initial introduction to it?

16. How do you see yourself moving forward with Moodle?

17. Do you have any other comments on your engagement with Moodle*?*

Appendix E Interview schedule for students in the exploratory study

1: How was Moodle introduced to you at ITWI?

2: Was it your first time using a VLE?

3: What was your attitude to Moodle when it arrived?

4: What were the positive/negative aspects of Moodle's arrival to your work environment?

5: Who was involved in your introduction to Moodle?

6: Did you encounter any difficulties when you started to use Moodle?

7: Can you tell me about the impact of Moodle on your learning environment?

8: Has using Moodle impacted on your work load?

9: Has Moodle impacted on your relationship with your lecturers?

10: Has Moodle impacted on your study activities?

11: What features of Moodle do you actually use?

12: Do you think that Moodle is suitable for your subject area?

13: Where and when do you use Moodle?

14: Do you have any other comments on Moodle?

Appendix F Summary of exploratory study thematic analysis

		The importance of student issues							Lecturer - personal goals								The importance of technology related issues							
	Descriptive Codes	The importance of student issues	the importance of connecting with students	lecturer personal goals	time conscious	work from home	better organised	impact on attendance	impact teaching quality	connection with students	gives convenience	moodle as a learning support	suitable for all subjects	connection with lecturers and course	good tech support	enthusiasm for moodle	easy to use	difficulty with the technology	choice element	no college policy	desire to learn more
Business	Lecturer 1	5	3	8	5	1		1	3	5					2	2					3
	Lecturer 2	7	2	4	1		2		6	9					1	7				3	1
	Student 1		2			2		2		4	1	3	2	9		2	2		1		1
	Student 2		2			1	1	1		2	4	4	2	4		1			1		1
Tourism&Arts	Lecturer 3	4	6	3	2	2	4	1	1	3					1	7				1	2
	Lecturer 4	5	1	2	2		5	2	5	3						3					
	Student 3		2		1	2	3				4	6	2	3		2	1		1		2
	Student 4		2			1	1	1		2	2	5	1	4		2	1		1		1
FDT	Lecturer 5	2	3	3	2	2	4	1	1	2					1	5				1	1
	Lecturer 6	6	1	6	5	2	3		3	5					5	5					1
	Student 5	2	1		1	2	3	1		1	5	8	1	4		2	2				
	Student 6	3	1			5	3	1		2	3	7	1	4	1	2	2		1		5
Engineering	Lecturer 7	5	2	2		1	1	2	2	7					1	4		4			
	Lecturer 8	5	1	2		1	6	2	5	6					4	5					
	Student 7		2		1	1	2	1		1	2	3	2	4		3	2				1
	Student 8				2		5			1	4	8	1	6		2	2		1		

The figures denote the number of times a theme was found in a transcript.

Exploratory Study Interviews (lecturers and students) - Thematic Analysis Summary

	Themes	The use of technology to deal with student driven teaching/learning issues	The use of technology to satisfy personal goals in one's work environment	The negative impact of technology on attendance	The use of technology to satisfy management goals	The use of technology for student convenience	The use of technology as a point of connectio n to lecturers and course	The use of moodle as a learning support	The importance of informal tech support	A desire for more usage of moodle
Business	Lecturer 1	■	■						■	■
	Lecturer 2	■	■		■				■	■
	Student 1					■	■	■		■
	Student 2					■	■	■		■
Tourism &Arts	Lecturer 3	■	■						■	■
	Lecturer 4		■	■					■	■
	Student 3					■	■	■		■
	Student 4					■	■	■		■
FDT	Lecturer 5		■						■	■
	Lecturer 6	■	■						■	■
	Student 5					■	■	■		■
	Student 6					■	■	■		■
Engineering	Lecturer 7	■	■	■					■	■
	Lecturer 8	■	■						■	■
	Student 7					■	■	■		■
	Student 8					■	■	■		■

Shading shows the themes that emerged for students and lecturers.

Overall themes that emerged:

(i) The use of Moodle to deal with student-driven teaching and learning issues.
(ii) The use of Moodle to satisfy personal goals in one's work environment.
(iii) The negative impact of Moodle on attendance.
(iv) The use of Moodle to satisfy management goals.
(v) The use of Moodle for student convenience.
(vi) The use of Moodle as a point of connection to lecturers and courses.
(vii) The use of Moodle as a learning support.
(viii) The importance of informal technical support.
(ix) A desire for more usage of Moodle.

What these themes incorporate:

1. **The use of Moodle to deal with student-driven teaching and learning issues.**
Dealing with student perceptions, student demands, an awareness of students as digital natives and an awareness of the need to embrace technology.

> **L:** I was getting away with handouts used year after year. Now I felt I had to formalise things more.
> **L:** It came from students; they liked it, they want it.
> **L:** I think students embrace it and want it, and on that basis I think we should adapt it.

2. **The use of Moodle to satisfy personal goals in one's work environment.**
Lecturers' desire to:
(i) become more organised
(ii) produce better quality materials
(iii) better structure given to delivery
(iv) an awareness of material in the public domain
(v) improve teaching quality using technology
(vi) a desire to work from home
(vii) time conscious
(viii) the need to use technology due to peer pressure
(ix) the reduced amount of photocopying
(x) a formal record of delivery and collection of assessments

> **L:** It really has motivated me to become a bit more organised.
> **L:** If used correctly, it should reduce your workload, but again it's changing the mindset.
> **L:** It saved me loads of photocopying.
> **L:** I can conveniently put my material up from home.

3. **The negative impact of Moodle on attendance**

(i) Lecturers fear that students will see Moodle as an alternative to attendance.

(ii) Students generally do not see Moodle as an alternative to attendance but specify how Moodle can be best utilised to allay the possibility of a negative impact.

L: I am a little worried that they would use it as an alternative to going to class.
S: I don't think it could impact on attendance. As I said before, on Moodle you are given a skeleton, and you have to come in to get the rest of it, so you would have to be in the whole time anyway.

4. **The use of Moodle to satisfy management goals**

A feeling that management want the college to embrace technology but with no formal policy of implementation.

L: But without a formal policy, I don't know what we can do.

5. **The use of Moodle for student convenience.**

(i) Students see Moodle as providing great convenience for accessing materials, connecting with lecturers, checking for daily updates, notices, deadlines, submissions, etc.

(ii) Students like the idea of 24-hour access.

S: I think it's brilliant because it's so handy and convenient.
L: It gives students access to study when and where they want, which I see as a good thing.

6. **The use of Moodle as a point of connection to lecturers and course.**

Students use Moodle to connect/communicate with lecturers when person-to-person access may be difficult.

S: I found it user-friendly and a good resource for connecting to other students and to lecturers.

7. **The use of Moodle as a learning support**

(i) Students view Moodle as a support and a supplement to their learning; they see it as a repository to get extra material.

(ii) Students see Moodle as giving structure to their modules.

(iv) Students often use Moodle to substantiate notes from class.

(v) Students access Moodle almost every day; they see it as a contact point.

(vi) Students suggest ways in which lecturers could better utilise Moodle.

(vii) Students are more encouraged by lecturers who utilise more features on Moodle.
(viii) Students perceive lecturers who use Moodle diligently to care more for them.

S: You feel more involved and that you are more cared for. It feels that we belong more to a group.

8. **The importance of informal technical support.**
Lecturers all see the need for technological support but are happy to have it as a one-to-one basis, and most of their learning of the technology is on an ad hoc informal basis.

L: IT support, I found helpful. Grainne Murphy gave me one-to-one [support].
L: I like to dip in and dip out, and those of us who attended the initial training were like that.

9. **A desire for more usage of Moodle**
(i) All lecturers expressed a desire to move forward with Moodle and to try to use more features in the future.
(iii) Students expressed a desire to have all lecturers using Moodle. They see it as suitable for all modules, albeit in different ways.
(iv) Students see possibilities for a good use of forums in Moodle.

S: I think it would be great if forums could be used.
S: I would like if all lecturers used it.
L: I would like to use another two or three features every year.

Appendix G Interview schedule for lecturers in the DWR-based Intervention

Interview Questions

These questions will be used for the individual lecturers in the Business School before the first DWR-based Session. The data collected was used as an input to the mirror data. *(The headings are a guide for the research).*

Activity

Goals

What are the various roles for the people involved in the programme delivery?
What do you see as your role in the programme?
Do you have a goal/goals?
How do you know if you have achieved your goals successfully?
Could you achieve your goals in a different way?

Contradictions

Are there any issues that make it difficult for you to achieve your goals?
How do you deal with these issues?

Tool use

Do you use Moodle in your module delivery?
Why do you use / not use it?
Do you feel very comfortable using Moodle?
What do you use Moodle for?
What do you achieve by using Moodle?
Does using Moodle change your teaching in any way?
What impact does it have on your teaching/learning environment?

Working with others

Do you work with others on the programme? In what way are you connected?
Do you share or interact with colleagues on the programme in any way?
What are the explicit or implicit rules, norms and procedures influencing how you work?

Internalise

How does Moodle affect how you think and reason about your teaching and your goals?
Does Moodle change how you deliver your modules in any way?
Did/do you find it difficult to work with Moodle? Why? Expand?

Externalise

What kind of problems do you experience in your module delivery?
How do you deal with these problems?

How do you collaborate and coordinate with other lecturers on the programme?

Help

When you have difficulties carrying out your work, how do you express them and where do you find help?
How does the system provide help to other people – colleagues, students?
What knowledge exists about Moodle and how do you get access to it?

Change

What new things are possible with Moodle?
Do you see any of your problems/issues changing because of Moodle?
How does your work environment change as a result of Moodle in relation to colleagues, students, management, rules, etc.?

Appendix H Interview schedule for the focus group at the FDT School

Questions for the FDT School focus group – February 2011

1. How was Moodle introduced to your work environment?

2. What was your attitude to Moodle's arrival?

3. What were the positive/negative aspects of Moodle's arrival to your workplace?

4. What, if any, are the barriers to you using/progressing with Moodle in your teaching environment?

5. What supports you in using or progressing with Moodle at the FDT School?

6. Does the Institute support you in advancing with Moodle? Do you know of any strategy in place to enable you to develop in the future with other teaching technologies?

7. Does the Institute provide Moodle training for you at the FDT School, or how does that work?

8. Has the use of Moodle changed your role as a lecturer?

9. Can you tell me about the impact of Moodle on your teaching environment?

10. Has using Moodle impacted on your workload?

Appendix I Interview schedule for SIF project manager

I conducted an intervention-based study in the Business School from January to December 2010. In March 2010 I introduced an external Moodle expert at the request of the participants in the Intervention group. He partook in the Intervention throughout the remainder of that year.

1. How were you first introduced to the external expert?

2. What was your role in the organisation at that time?

3. What do you know of the MUGs intervention work?

4. Are you aware of any impact of the MUGs Intervention on the wider institutional context at ITWI?

5. Are you aware of any interest in the MUGs Intervention from the management within the Institute?

6. What kind of work did you get involved in/organise with the external expert?

7. What did you learn about ITWI from your work relating to improving teaching and learning with technology?

8. You were involved in the delivery of the TEL module. How did that come about?

Appendix J Interview schedule for external expert

1. When did you first come to ITWI?

2. You worked with the MUGs group in Business Studies. How were you introduced to that group?

3. Can you tell me about your work with the group from March to November 2010?

4. Did you see any changes in the group as you worked with them in the sessions from March to November 2010?

5. Do you have any contact with the group now that the Intervention is over?

1. Members of MUGs talk of gaining more than Moodle training from your sessions with them. For example, access to work going on in other institutes of technology, information on various conferences, etc. and encouragement to partake in initiatives. Can you comment on this?

2. Are you aware of any impact of the MUGs group on the wider institutional context in ITWI?

8. Do you know if management or any other groups had any interest in the MUGs Intervention?

9. You did a lot of other work in ITWI. How did this come about?

10. Can you tell me a bit about the other work you were involved with in ITWI?

11. You did many Moodle training sessions with various schools. Did you notice any differences in the different groups from these schools or campuses in ITWI?

12. Are you still involved in work at ITWI? In my communication with you during the MUGs workshops, you always requested me to keep management and our in-house Moodle trainer aware of your work. Was there any particular reason for this?